"THE FAR EASTERN REVIEW" – CHINESE RAILWAY CONSTRUCTION

A COMPREHENSIVE STUDY OF HISTORICAL REFERENCES WITHIN THE LIFE OF THIS JOURNAL OF THE DEVELOPMENT & CONSTRUCTION OF CHINA'S EARLY RAILWAYS, INCLUDING EXTRACTS OF RELEVANT PAGES (**SECTION 6 of 14**)

BY PETER A. CRUSH

For Introduction please see preface to Volumes I - V)

(Note : to view the relative pages of the magazine, scroll down to end of these notes for each volume, respectively)

Volume XVII

January 1921

The Origin of China's Modern Troubles Publisher G.B. Rea recounts Sir John Jordan's opinion that all of China's political problems could be blamed on Li Hung Chang's diplomacy in the late 19th Century. Eight pages in which railway "diplomacy" receives multiple mentions. 2 fold-out maps, 1st.: Political Railway Map of China 2nd. Map of North China.

Lung-Tsing-U-Hai (Lunghai) Railway Agreement Full text of agreement between the Chinese and the Netherlands governments. 3 small photos and 1 sketch map.

The Yellow River Bridge The Chinese government had invited proposals for replacing the old river bridge. 4 photos.

Railway Facilities at Harbin The U. S. Trade Commissioner reports that ample freight and passenger services connected Harbin directly with Mukden, Dairen, and Tientsin through the South Manchurian and Peking-Mukden railroads.

Baldwin Locos. for China 10 locomotives shipped for the Peking-Suiyuan Rly.

Rolling Stock Bonds Chinese banks proposed issuing $6m. for purchasing cars.

The Hukwang Railway In order to make use of famine labor in North China, Szechuan-Canton-Hankow Railway had decided to renew the work of building certain sections of the line by employing the famine sufferers.

Ching-Meng Railway This branch of the Taoching Railway had been surveyed.

Chefoo-Weihsien Grading Work on 200 miles was in progress.

Tsang-Shih Line Work on 210 km was in progress.

Canton-Hankow Survey Supended work on this line was hoping to be resumed.

February 1921

The Official Status of the Shantung Question Statement issued by the Japanese government on Japan's rights over Shangtung. Followed by two more articles about the ex-German Shantung Railway. Total 19 photos and map.

Shantung Coal and Iron – The Fangtze Group In-depth description of the Weh-hsien and Poshan coal fields, includes mines at Tsuchuan, Chinglingchen Iron mines and Chung Hsing Coal mines. Multiple photographs and sketch maps showing mines and railway connections.

Chinese rolling Stock Loan 27 Chinese banks had organized a $6m loan for a short-term railway car loan.

The Shihchiachuang Railway A report on this line being built to connect the Peking-Hankow and Tienstsin-Pukow lines as a famine relief measure.

Tsingtau Harbor Works Sketchmap of harbour improvements with railway connections.

Short Reports on :

Tientsn-Pukow Railway Congestion
New Link Canton-Kowloon Railway
Chinese Rolling Stock Loan
New Railway Line, Tzeliutsing, Szechuan
Nationalization of Nanning Railway
Famine Labor for New Chinese Lines
A New Chhli Railway
Tsinpu Railway Nets $3m Profit
New Stations on Tientsin-Pukow Railway
Consortium Loan Terms
Chinghuachen-Pingyangfu Line
May Remove Tangshan Station
New S.N. Rolling Stock
Sleepers for the Peking-Suiyuan railway
Obstructing Mr C. C. Wang

March 1921

America and Japan in Manchuria Article discussing Harriman's proposal to force Japan to sell the South Manchuria Railway to American railway financier E.H. Harriman. Continued theme in next article:

A Square Deal for China

The Brains of the Chiaotungpu Discussion about Minister of Communications Yeh Kung-Cho and China's attempt to regain sovereignty over her railways. 1 portrait of Yeh.

Dairen Imports Rails from U.S. 30 miles of 100lb. rails for the SMR

Construction of the Changchow-Amoy Railway The gentry intended to resume completion of this line.

Hsi-Kwang Plans Chehkiang merchants plan to contract the Hsi-Kuang railway so as to connect the two provinces of Chehkiang and Anhui

Harbin-Blagoveschensk Line Manchurian merchants were planning to build this line.

Pasha Extension of the S.-H,-N. Railway An extension had been proposed.

Chinese General Wants to Build Railway A general had proposed a Yiencheng-Chowkou branch of the Peking-Hankow Rly.

Perhaps, Perhaps Not ! Half of the projected Chefoo-Weihsien line reported as in doubt again.

April 1921

The Kailan Coal Mines A six-page description of the mine and how the name "Kailan" (*Kailuan*) represents the mines in the districts of Kaiping and Lanchow (*Luanzhou*). The mines are served by the Peking-Mukden railway. 12 photographs.

Famine Prevention Seen in Railway Development Discussion on how railway building might help alleviate the problems of the unemployed who were starving.

Portrait of Railway Expert Dr. C.C. Wang

Chinchow-Tsitsihar Line Again Brought to the front The government again considering building this line.

Double Track Line to Shanhaikwan The cost of this improvement would be $6m for which a short term loan would be obtained.

To Construct the Chinchow-Aigun Railway The military authorities were pressing for this line.

Suiyuan-Powtaochen Railway- Line to be extended from Suiyuan.

Sleepers for Tsin-pu Railway An order placed for 225,000 sleepers.

Rolling Stock Unsuitable for Use The MD of the Tsin-pu Railway had received a consignment of 300 foreign goods cars unsuitable for use.

Manchurian Railway Projects Chang Tso-Lin was conferring on whether to build the Chinchow-Tsitsihar Line.

New Line Kowloon-Canton Railway a Projected line between Waichow and Ping Wu would cost $3million.

Budget of the S.M.R Annual budget published.

Contemplated Railway Line Surveying commenced for line Tzelieutsing - Tenchingkwan in Szechuan.

New Double Rail on Peking-Hankow Railway Double tracking contemplated .

Tsin-pu Buys New Cars Order for 100 cars placed.

$12 million for Shih Cheng Railway A loan taken out for extending the line to Chengchow.

Plan for Double Rail The Tangshan-Shanhaikwan section of the PMR to be double tracked.

China Railway Construction Another short section of the Szechuan-Canton-Hankow Rly. to be undertaken.

Chinchow-Shiuyang Branch of the P.M R. Land being purchased for this line.

Rolling Stocks for the P.H and S.N Rlys Orders for locomotives and cars placed.

Sze-Tiou Railway in Fengtien Construction to start on April 1st 1921.

Timber for T.P. Rly 225,000 "pieces of logs" bought.

Repair and Extension of Railway Wharves at Pukow Floating wharves at Pukow station to be widened.

F.E.R Supplement on Manchuria. – Portraits of Marshal Chang Tso-Lin, Gen. Sung Lih-cheng and Gen. Chang Hsun.

Map of Manchuria and Mongolia Illustrates Japan's political grip on the regions and the railroads.

Political Railway Map of China A repeat from a 1914 issue of the FER.

America and Japan in Manchuria An account of E.H Harriman's plan. Includes large Railway Map of North China

Hsu Shih-Chang Portrait

Sketch Map of China Showing Railways Showing existing lines and those proposed by Sun Yat-Sen as "urgent".

May 1921

Central Railway Station Peking A central union railway station was planned at a cost of $3million. It would be built east of the Temple of Heaven, linking the Peking-Hankow line with all stations in the north.
New Railway Loan The Kailan Mining Admin had applied for a loan through the government to facilitate double tracking.
Inner Mongolian Railway The military had applied for approval to build the Chinchow-Aihun line.
Chinese Engineer Honored A bronze statue of the late Mr. Jeme Tien-yu was proposed for Pataling, on the Peking-Suiyuan Railway.
Chinchow Chiaoyang Line.The survey of the Chinchow-Chiaoyang railway line has been completed and construction work begun.
Hukwang Railway. The survey of the 500-li extension of the Hankow-Canton railway from Hunan to the border of Kwantung had been completed.
Chekiang Railways.The Tuchun of Chekiang was anxious to employ his soldiers to build the railway line from Hangchow to Gyiuchow.
Harbin-Aigun Railway Reports were circulating of cancellation of a Russian agreement to build this line.
Paotow Extension, Peking- Suiyuan railway . The cost would be $5.12 million.
Proposed S.N.R. Branch Residents of Chi Tze Chen had requested a short branch to connect the market town.
Hangchow-Mokanshan Branch of S.H.R Railway The board was proposing this line.
Steel rails for P.S Railway 85lb steel rails had been purchased.
Ssupingkai-Taonanfu Line Work on the extension about to commence.
Hankow-Canton Railway Lack of funds had had stopped work.
Proposed Tienpaoshan-Tumen Railway This proposal had stalled 5 years previously. Now to be reconsidered.
Locomotives and Wagons Tender The tender would be opened on 28 June.
Peking-Mukden Improvements More locomotives had been ordered from USA.
Trunk Line Extension Various trunk lines to be extended.
S.N.R Receipts January revenue had dropped.

June 1921

An Express Port for Shanghai Proposals for a new express shipping port for Shanghai on the Yangtze. 1 sketch map showing proposed railway connections.
Russian Foundry Practice in the Harbin Shops of the Chinese Eastern Railway An American railway expert had been sent to Harbin to advise on railway maintenance but Russian and U.S systems were widely different.
China's Own Railway Program Editorial discussing China's reluctance to accept foreign loans for railway development.
China's Railway Finances Statistics for year 1919. 1 photo of Chang Chitan, new Minister of Communications.
Hong Kong's Huge Contract a detailed description of a large-scale reclamation project for Hong Kong's Praya East. This involved demolishing Morrison Hill and using the fill to fill in the sea at today's Wanchai. A temporary railway was to be built for moving the fill, the tracks of which would run in a drainage channel which on occasions would be submerged under water at high tides. Push- pull locomotives would be used at each end of the wagon trains because the locomotives were too high to pass under a main road bridge. One large foldout map of the proposed new road network.
Yellow River Bridge Tenders A request for tender opening to be delayed because a Belgian adviser was not yet in Peking.

British Locos Arrive Locomotives built in UK had arrived at Woosung for the S.N.R.
C.E. Railway Board. Foreign governments had recommended to the appointment of an international administration for the Chinese Eastern Railway.
Canton-Hankow Railway. Mr. Hsu Sung-hao, Managing Director of the Canton section of the Canton-Hankow Railway had proposed completing the upper section to Ping Shek by floating a loan of $20m.
Suiyuan-Paotaochen Railway. The Peking-Suiyuan Railway Administration had petitioned to build a line from Suiyuan to Paotaochen.
Chefoo-Weihsien Railway. A director was to be appointed.
Sleepers for Kirin-Changchun Railway. An order for 150,000 railway sleepers had been placed.
Mengtze-Boyi Railway Project. The military and civil governors of Yunnan were templating the construction of a railway from Mengtze to Boyi.
Chuchow-Pingkiang Railway. The military commanders of Hunan and Kiangsi had agreed to co-operate in constructing this line.
Rolling Stock Tenders.The Peking-Hankow Railway had invited tenders for rolling stock..
Tsang-shih Railway. The new railway between Tsangchow and Shihchia-chuang was estimated to cost $1.84 million.
Peking-Suiyuan Extension short tem domestic bond for $5 million to be issued to finance construction.
S. N. R. Branch, Changchow. A short branch line to be built from Changchow to Chi-tze-yen for transport of food stuffs.
C. E. R. Loan. The Chinese Eastern Railway had borrowed $3 million from domestic banks to pay off debt.

July 1921
The Yellow River Bridge An introduction to Dr J. A. L. Waddell, an American engineer invited to join a commission advising on the new railway bridge.
Motor Coaches for the Kowloon-Canton Railway The Hong Kong government had ordered two Hall-Scott motor rail coaches. 1 photograph.
British Locomotives for the S.N.R. Six more 4-6-0 locomotives built by the North British Locomotive Works had arrived. 1 photograph and some specifications.
Modern Railway Hotels, China. A chain of modern railway hotels had been planned.
Central Railway Station, Peking. The plan for this new station was moving forward under the leadership of the Peking-Hankow director
The Yellow River Bridge. The Japanese legation had requested that a Japanese railway engineer should also be appointed to the Yellow River Bridge commission.
The S.M.R. Co.'s Fresh Enterprises. Yen 12 m. had been appropriated for the new fiscal year.
Harbin-Heiho Railway. Funds would be raised locally to meet the expenses of the construction of this line.
A Loan for the China Eastern Railway. The ministry of communications was negotiating with the Bank of China and the Bank of Communications for a loan of $2m. to support the Chinese Eastern Railway.
A Railway Loan. The ministry of communications had negotiated with A British syndicate for a loan for construction of a double-track railway line between Tangshan and Shanhaikuan.
The Kirin-Huaining Railway. The vice-president of the Industrial Bank of Japan was negotiating with the Chinese government about a loan for this line.
Kin-Sui Railway Extension. A loan agreement for $3m. had been signed.

Work Recommenced. Construction of the Chuchow-Chuping section of the Canton-Hankow Railway had begun on May 1.
Kirin-Huaining Railway. The Japanese legation had stated that the final contract for the Kirin-Huaining Railway Loan had not yet been signed.
The Peking-Suiyuan Extension. The completion of the Peking-Suiyuan Railway, a line about 416 miles had been announced.
Peking-Suiyuan Loan. It is reported that a loan agreement had been signed with the Japanese Asiatic Development Company for $3 million.
Canton-Hankow Railway New Cars. The Wuchang-Changsha section of the Canton-Hankow Railway had received a new shipment of 45 cars from England. Engineer-in-Chief Cox had recommended the engagement of two additional British engineers to look after the Southern Section.
Southern Section - Canton-Hankow Railway. It was announced that work upon this section could resume after funds had been found from other railways.
Double Track to Tiehling. The South Manchuria Railway had been building a double track line to Tiehling which would be completed soon.
New Railway Started. Construction of a branch line of the Peking-Mukden railway from Chinchow to Chowyang was proceeding.
Loan for P. M. Railway. For the building of the Dahushan-Heishan branch of Peking- Mukden railway, an amount of $300,000 had been borrowed from Ming Yih Coal Mining Company.
The Chefoo-Weihsien Railway. The road-bed had been completed.
New Chinese Railway Company. A 70 mile railway from Canton to Hoiping in Kwangtung province would be a commercial enterprise.
Kirin-Tehui Railway. Construction work had been delayed by a shortage of materials.
Ssupingkai-Taonan Line. Construction of the 70-mile extension from Cheng-chiatun to Paiyintala had started in spring, and had progressed well.
British and Chinese Corpn. Loan. The cabinet had approved a loan agreement with the British and Chinese Corporation, Ltd., for double tracking the line between Tangshan and Shanhaikuan on the PMR
Chuchow-Chuping Rail Work Started. Construction had begun in May.
A Chinese Railway Deal. Detail of the loan agreement for the doubling-tracking of the PMR (as above)
Heiho-Harbin Railway to be Built. Construction of this had been decided upon by the Heilungkiang provincial assembly.
A New Railway Line. Japanese interests had approached the government with regard to the construction of a railway from Tienpaoshan to the Tumen River.
Proposed New Road. The director of the Shanghai-Nanking Railway had suggested constructing a double line between Pennin and Tanyang.

August 1921
Chinese Railways Current mileage figures for China's railways .
Anshan Iron Mines 2-page description of the mines. 1 photo of a G.E 1200-volt electric locomotive.
Fushun Colliery Development 6-page description 11 photos, two of railway lines.
The Kirin Kwainei Railway 2-page description 3 small photos & 1 sketch map.
The Yellow River Bridge Announcement that a Belgian firm would build the new bridge. A list of the 19 tenders received is provided.
Railway Car and Locomotive Tenders Opened at Peking The full details of tenders received for the supply of locomotives and rolling stock for China's railways.

Peking-Hankow Line A full page advertisement.
Peking-Mukden Rail Loan. The loan for double-tracking part of the Peking-Mukden line had been signed.
Suiyuan-Paotowcheng Branch Line of Peking-Suiyuan Railway. Chow Tun-kao had requested that the projected Suiyuan-Paotowcheng branch line should run through Tok-hsien and Towu.
New Equipment S.N.R. Rolling stock purchases.
Electrical Signals, Peking-Suiyuan Line. Electrical signals installed on the Nankow-Kongchong section had proved satisfactory.
Extension of Peking-Suiyuan Railway. Contract to supply steel rails and sleepers signed
Tzeliutsing-Fuchenhsien Railway Will Resume Construction. The proposed line was considered important for development of enterprise.
Canton-Kongmoon Railway Proposed. Merchants had organized a company for the construction of this railway.
Work of Sze-Tiao Railway Laying of rails on the Cheng-Pah section had commenced.
Japanese Loans for Railways Secret negotiations were in progress about loans for the Kan-Hsu and Shun-Tsi Railways.
New Engineers for Track Work Four engineers had arrived for the P. M. Railway double-tracking from Tongahan to Chinwangtao.
A Prospective Line The Tienpaoshan- Tuman line was still under consideration,
To Build a Mentoukou-Kingshahwu Railway The line was being considered.
Light Railway in Shantung Desired. A petition had been submitted to build a line between Tungtu and Poshan.
Construction of Changtien-Sochen Light Railway Again Mooted. A 1916 scheme for this line had been dropped but was now being considered again.
Rolling Stock for Chinese Government Railways Foreign loans still featured in tender purchases in spite of efforts to avoid such loans which gave controls to foreign enterprises.
To Connect Pangkiang with Pingtichuan : China. Chang Ching-hui, commander-in-chief of the Mongolian expedition had requested the Peking government to build this railway.
Chinese Eastern Railway Loan. A Japanese banking group was to grant advances on a total loan amount of Y. 20 million.
Railway Car Loan, Chinese Banking Group. Tenders invited for purchasing 16 passenger car underframes.
Deny New Rail Contract. The ministry of communications had denied the conclusion of a Weihsien-Chefoo railway contract with American financiers
Kirin-Kwainei Railway Loan Consummated. A provisional agreement had been agreed and an advance of Y.10m. made.
A New Railway for Canton to Heungshan. Plans and estimated for this line submitted.
Proposed of Early Construction of the Tzeliutsing-Fushun Railway in Szechuan. The ministry of communications had approved the registration for construction. Work was expected to commence in August.

September 1921
An Elevated Railway for Shanghai An engineer describes his proposal for a round-city elevated railway running on reinforced concrete arches. Several sketches.
French Engineering in China Editorial discusses how French money is behind many of the Russian and Belgian railway projects in China.

Y. Matsuoka An introduction to the new Director of the South Manchuria Railway. 1 portrait.
Kowloon-Canton Railway , British Section A summary of the Annual Report for 1920.
To Re-Construct Bridges Along Peking-Mukden Railway. General Chang Tso-lin had proposed replacing the old iron bridges between Mukden to Shanhaikwan.
Belgians Given Yellow River Bridge to Build The contract for this replacement bridge had been awarded to the Societe Beige pour l'Exploitation Industrielle, at an estimated cost at $10.5 million.
Peking-Hankow Line Full-page advertisement.
Cheng-kar-tung-Pei-ying-tai-lia Railway Under Construction. This section on the Sze-ping-kar to Cheng-kar-tung line was proceeding.
Light Railway Proposal, Shantung A line between Pao-shan and Tai-an had been suggested.
Ssupingkai-Taonan Railway. The Chengchiatun-Paiyintala extension was in operation and would be opened for traffic in November.
Harbin-Heilungkiang Railway May be Constructed. Arrangements were being made by local authorities to raise funds for the project.
Total Revenues of Chinese Railways The ministry of communications had promulgated a statement of revenues for 4 months.
Would Extend Suiyuan Road Extension of the Suiyuan line N.W. to Ninghsia was being considered.
Negotiation Made for New Railway. The Industrial Bank of Japan was negotiating a loan for the construction of the Kirin-Huanining Railway, to run from Kirin through Yenchi and across the Tumen River into Korea.
Nantungchow Cotton Mill Building Light Railway, The Dah Sung Cotton Spinning & Weaving Mill (No.3) Nantungchow, had constructed a 12li long light railway at north of the factory to Tsin-loong-kong.
To Repair Light Railway. General Wu Pei-fu has decided to repair the light railway from Lo-yang to Loong-men.
Feng-Huang-Tai to Establish Railway Station. Plan to build this station on the Kaifeng-Loyang Railway.
New Rolling Stock to Tsin-Pu Railway Approval to purchase 50 Passenger cars from an American corporation.
Improvement Work on Sze-Tao Railway. Old bridges which had been Roughly built were being replaced with new modern ones.

October 1921

The Yunnan Railway Annual Report extract for the year 1919. 2 photos.
The Yellow River Bridge Scandal The French, Belgian and British members of the Yellow River Bridge commissioner had made accusations of "dishonorable conduct" against American engineer Dr.Waddell over the award of the contract.
Regulations for Purchasing Chinese Railway Materials Chinese Government Railways had published new rules about tendering for the purchase of railway materials.
A New Line Proposed, Chang-Nu-Shan. A plan had been prepared for the construction of a motor-road or a light railway between Chekiang and Kiangsi.
A New Railway in Fengtien Planned. Chang Tso-ling had formulated a plan for building a light railway in the north-eastern part of the province of Fengtien.
Tenders Invited The C.E.R. had invited tenders for supply of iron roof sheeting.

Inauguration of Chenkartung-Beiyuantailai Railway. A report that one-third of the construction work on the new line had been completed.
Possible Loan of Y.25,000,000 by The Chinese Eastern Railway Reported The S.M.R. was provide a loan to the Chinese Eastern Railway Co.
Coal Mining Co. Building Light Railway. The Chang Shun Coal Mining Co. of Shanghai, was to build a light railway for their mine in Chekiang. Description of mine.
New Supply to Peking-Mukden Railway. An order for sleepers had been placed with Mitsui Bussan Kaisha.
Passenger Car to be Equipped with Machine Guns. The Tientsin-Pukow line was reportedly contemplating putting machineguns and police on trains to counter robberies.
Immediate Construction of Shaoshing-Shoshan Railway Requested. A petition had been presented to the ministry of communications for permission to build this line.
The Light Railway Along the Yalu River. The civil governor of Fengtien had instructed the Taoyin of the eastern prefecture of Fengtien to make preparations for the construction of the proposed light railway.
Signal Station on Peking-Suiyuan Railway A signal station was planned at Ning-yuan at an estimated cost of about $46,300.
Inauguration of Peking-Suiyuan Railway. The inauguration ceremony of the Peking-Suiyuan Railway was to be held on 19 September.
Szepingchar-Taonan Railway 80% of the line had been completed.
Railway College Proposed by Warlord Chang. Chang Tso-lin was to establish a railway college in Manchuria for the Chinese Eastern Railway.
Peking-Suiyuan Railway to be Extended to Ningsia. The ministry had decided to build this extension as soon as possible.
S.N. Railway Building Side -Tracks at Nanking and Woosung. Additional sidings were to be built to meet demand for storage and to serve wharves.
Big Order of Steel Rails for a British Firm. Messrs. Baldwins. Limited had secured an order for steel rails.
Replacement of Rails on S. M. R. Co. Line. The SMR were to upgrade their track to heavier duty rails and double tracking.
A Railway System. The Cantonese government was considering building trunk-lines from Canton to Chungking and Yunnanfu.
Order for Steel Rails An order had been placed for 17,000 tons of steel rails for the Peking-Suiyuan Railway.
British Offer Loan To Help China Buy Railway Rolling Stock. The ministry of communications had submitted a short-term loan proposal to the British-Chinese Corporation for the purchase of rolling-stock for the Hunan-Hupeh section of the Szechuen, Canton and Hankow Railway.
Military Governor of Heilungkiang to Build Railway. $4 m was being raised for the construction of a railway from Harbin to Heilungkiang.
Construction of Light Railway Affected by Flood A flood at Hu-chow had caused work to be suspended.
Chinese Eastern Railway and South Manchuria Railway May be United in Transportation Service. Negotiations were in hand for through services.
A Further Purchase of Cars A contract had been awarded for the supply of 40 steel covered wagons for the SHNR.
Prolongation of Light Railway Nantungchow The Dah Sung Cotton Mill's light line in Shanghai was to be lengthened.
Improvement Work on Peking-Mukden Railway More double tracking was being planned
New Work on Tientsin-Pukow Railway Approved. The company's warehouses were to be enlarged.

Chinese Railway Sleeper Factory. A Chinese factory was to be established to avoid having to buy from overseas.
Materials for Szechuen Railway Ordered From Shanghai The Tzeliuting - Foochen Railway in Szechuen was ordering materials.
Supplement – Chinese Industrial Companies In this 12- page list of companies registered in the country, there are two companies listed under "Railway Transportation Companies" :-
Shaochow-Swatao Railway Transportation Co., Ltd., freight and passenger transportation service, $2,500,000, Swatao, Kwangtung, established May, 1908, registered August, 1905.
Shongcheng Light Railway Co., Ltd., $109,200, Shongcheng, Kirin, established February, 1913, registered October, 1916

November 1921
Electric Grab Transporters for Han-Yeh-Ping An illustrated description of a huge mechanical loader and extractor for iron ore installed at Hanyang Steel works. The article mentions the company's 19 miles of railway at Tayeh. 6 photos.
Weighbridges for Use on Chinese Railway Systems An illustrated article describing weigh bridges being built in Britain for Chinese railways.
The Kiangsi Railway A report that this railway was rumoured to be unable to meet its loan obligations.
Reinforced Concrete Railway Bridges Editorial discussing a French engineer's proposal for using concrete to build the Yellow River bridge.
Railway Bridges for China. The Netherland Syndicate Ltd. for China had placed orders for the construction of 150 railway bridges of various dimensions for use on the eastern part of the Lunghai railway.
Light Railway Extension, Kirin. The Tien Doo Light Railway Co., Kirin, had increased its capital and established branches at Lung-tsing-ching and Loh-dao-kew in Yen-ki
Harbin-Heiho Railway Chang Tso-lin favored the construction of a railway from Harbin to Heiho under General Woo Tsing-sun's promotion of the scheme.
Shanghai-Hangchow-Ningpo Railway. The company was seeking a loan the repair of the Tsao-Wo-Kiang Railway bridge and building a line between Shaohsin and Tsaowo.
Extension Work on Peking-Suiyuan Railway. The company was contemplating the extension of car sheds at Nan-kow, Kong-chong and Ping-dee-chien and the building staff quarters at Ping-dee-chien.
New Structure on Peking-Suiyuan Railway. Planned to establish a signal station at Ning-yuan.
Joint Transportation Conference of Domestic Railway. The 10th session of the China's railways joint transportation conference would be held on 12 October.
Construction of Sing-ming-Fankao Railway again Mooted. Construction of this line was again under discussion.
Railway Under Construction. Construction work had begun on the Chinchow-Chiaoyang Railway. The Paotu-Suaiyuan section of the Peking-Suiyuan Railway was also under construction. Construction of the Chunhow-Chuping section of the Canton-Hankow railway had begun on 1st. May.
Kaifeng-Tsining Railway. The construction of this line had been approved.
Work on Peking-Suiyang Railway. A train collision had occurred at Fusun station and the Railway Administration was taking preventive measures against any further similar incidents.

December 1921

Drop-Hammer Battery for Tangshan Shops Details of a large drop hammer supplied for the Tangshan Works of the PMR. 1 sketch and 2 photos.

Yellow River Bridge Further information about the designers of the new bridge.

The Statistical Aspect of British Railway Operation Methods A caparison of international operating methods, including those of China.

Chengchiatun Railway Extension. The rails were to be laid as far as Paiyintala on the Ssupingkai Taonan Line during November.

Ching Yu Railway. The Chinese chambers of commerce at Shanghai were opposed to the French contract for this line.

Short Railway, Woosung. The Woosung commercial port bureau planned to establish a short railway line between Wangchupang and Taihsingmiao bridge.

Proposed Railroad Between Kwangtung and Kwangsi, China. The Governor of Kwangsi had proposed this line.

Transportation Facilities in Jehol Chang Cho-Lin was planning branch line to connect with the P.M.R

Canton Hankow Railway. Work had been postponed again.

Chefoo-Weihsien Railway Get American Loan. A report that construction of this line was on the point of interruption

Chingchow-Jehol Railway under Construction. The section between Chingchow to Nee-chow reported as completed.

Chinese Eastern Railway Finances. New bonds were to be issued to finance the purchase of rolling stock

Chinghsien-Jehol Railway Proposed The ministry of communications was considering this railway.

British Loan Reported. It was rumoured that the ministry of communications was attempting to obtain a loan of $8 million for a branch line on the PMR.

Kiangsi Railway. The provincial government of Kiangsi had secured the sanction of the Peking government for raising an $8m. domestic loan for the repayment of Japanese loans to the Nanchang- Kiukiang Railway Company.

Harbin-Heiho Railway. The promoter of this line had still not raised sufficient funds.

Light Railways for Mongolia. The ministry of communications had decided to build three light railways on the north border.

Traffic Opened on Chinghsien-Chaoyang Line. Traffic had opened on the Chinghsien-Neehsien section on the Chinghsien-Chaoyang Railway, a branch of Peking-Mukden Railway.

Fushun-Shinchlng Light Railway. The construction of this light railway was under consideration.

Light Railway Urged. A survey for a railway on Shun-Lung-Shan Mountain had been requested.

Light Railway Project. Tsao Kun had requested the appointment of several railway engineers to survey the Hsinglungshan route for military purposes.

Kalgan-Kiakhata Railway Proposed. Chang Tso-Lin had requested urgent building of this line.

Locomotives Ordered Ready for Shipment to China 47 locomotives ordered from U.S. by Peking-Suiyuan Railway were completed and ready for shipment. to China.

Chinchow-Chaoyang Line. The new railway section, about 30 miles long, from Chinchow, on the PMR had been completed and opened to traffic.

Rolling Stock held Up The shipment of rolling stock had been held up at customs for non-payment of customs duty.

New Locos, Shanghai-Nanking Railway. The Shanghai-Nanking Railway had received 13 engines manufactured by the North British Locomotive Company.
Canton-Hankow Railway Survey Stops. The surveying work on improvement of the location of the line south of Chuchow to the border of Kwangtung had been suspended due to lack of funds.
Cox Retires. Mr. A. G. Cox, engineer-in-chief of the Canton-Hankow Railway had retired. Cox was one the oldest foreign engineers in the railway service of the Chinese government.
Kin-Han Loan Gen Wu Pei-Fu had offered the railway as security for an American loan of $5 million.
Mukden Arsenal Light Railway. The arsenal was to construct a light railway to the Mukden station.
Harbin-Heiho Railway. It was rumoured that the Chinese authorities were negotiating with American and Russian capitalists for a loan to construct the long-proposed Harbin-Heiho line.
Full page advertisements for:
South Manchuria Railway
Shantung Railway
Peking-Hankow Line
S.M.R. Shakako Workshops
S.M.R Coal & Iron Mines

/continued on page 160

The Origin of China's Modern Troubles

By George Bronson Rea

SIR John Jordan tells us that nearly all of the trouble that has arisen in China since 1895 was due to Li Hung-chang's diplomacy. Then, it was, as Sir John reminds us, that Li came under "the imperialist influences of Germany and Russia." The visit to Moscow of the mandarin marquis and the secret treaty of 1896 are deemed by the most distinguished British "Old China Hand" the sources from which have come most of the modern political woes of China.

The Russo-Chinese secret alliance of 1896 is the most vital fact in the modern history of China and it proved the decisive fact in the modern history of Russia. It brought about the Russo-Japanese war and that war caused the first Duma revolution which sowed the seeds that were ultimately to raise Russia's red crop of Bolshevism—the sanguinary harvest of 1917.

Dr. E. J. Dillon in his *Eclipse of Russia* gave us the inside story of the triple alliance against Japan; the Russo-French-German combination of 1895 that revised the terms of the treaty of Shimonoseki and compelled the retrocession of the Liaotung littoral. At Paris, in 1919, Mr. Sazanof, president of the Russian council of ministers, disclosed to the supreme council of the peace conference the text of the alliance signed at Moscow in 1896 by the Marquis Li and Prince Lobanof-Rostofsky, who was at that time foreign minister to the newly-crowned Czar Nicholas. The English translation of this historic document is reproduced here for the benefit of serious, impartial students of Far Eastern problems. Its basic importance will be recognized at a glance.

While British, French, German and Japanese diplomats were well-informed as to the existence of this alliance—reference was made to it in European state papers and the London *Daily Telegraph* printed a version of it in 1910—it was not until the spring of 1919 that it was formally admitted by Russia. China has never acknowledged or repudiated it. On May 17, 1919, the Russians in Paris, through the medium of Mr. Sazanof, entered a formal caveat against revision of any of the Russo-Chinese commitments, presumably including the Moscow bargain. On October 11, 1920, Foreign Minister Yen of China declared that the Chinese treaties with Russia have not been abrogated. The statement of Dr. C. C. Wang regarding the Chinese Eastern Railway is additional testimony that the Chinese respect Mr. Sazanof's caveat and do not intend to take advantage of Russia's present weakness.

HIS EXCELLENCY LI HUNG-CHANG,
Grand Secretary of State, Viceroy of Chihli, etc. etc.

It is a pathetic commentary upon the efficiency of the American state department that up to the present moment the fact of the alliance has not been admitted. Quite recently the department clung to the view that "the asserted alliance" was "the spurious Cassini convention" and that "the Cassini convention was a combination of the Russo-Chinese railway agreement and a secret treaty prepared by Russia but unsigned by China." The department was not well informed. President Wilson apparently re-

TEXT OF THE (LI-LOBANOF) RUSSO-CHINESE ALLIANCE —While attending the coronation ceremonies of Emperor Nicholas at Moscow, in May, 1896, Li Hung-chang concluded with the Russian Minister for Foreign Affairs (Prince Lobanof-Rostofsky) a secret treaty of alliance. The following is an English translation of the French text :—

"ARTICLE I.—Every aggression directed by Japan, whether against Russian territory in Eastern Asia, or against the territory of China or that of Korea, shall be regarded as necessarily bringing about the immediate application of the present treaty.

"In this case the two High Contracting Parties engage to support each other reciprocally by all the land and sea forces of which they can dispose at that moment, and to assist each other as much as possible for the victualling of their respective forces.

"ARTICLE II.—As soon as the two High Contracting Parties shall be engaged in common action no treaty of peace with the adverse party can be concluded by one of them without the assent of the other.

"ARTICLE III.—During the military operations all the ports of China shall, in case of necessity, be open to Russian warships, which shall find there on the part of the Chinese authorities all the assistance of which they may stand in need.

"ARTICLE IV.—In order to facilitate the access of the Russian land troops to the menaced points, and to ensure their means of subsistence, the the Chinese government consents to the construction of a railway line across the Chinese province of Amour (i.e., Heilungkiang) and of Guirin (Kirin) in the direction of Vladivostok. The junction of this railway with the Russian railway shall not serve as a pretext for any encroachment on Chinese territory nor for any infringement of the rights of sovereignty of his Majesty the Emperor of China. The construction and exploitation of this railway shall be accorded to the Russo-Chinese Bank, and the clauses of the Contract which shall be concluded for this purpose shall be duly discussed between the Chinese Minister in St. Petersburg and the Russo-Chinese Bank.

"ARTICLE V.—It is understood that in time of war, as indicated in Article I, Russia shall have the free use of the railway mentioned in Article IV, for the transport and provisioning of her troops. In time of peace Russia shall have the same right for the transit of her troops and stores with stoppages, which shall not be justified by any other motive than the needs of the transport service.

"ARTICLE VI.—The present treaty shall come into force on the day when the contract stipulated in Article IV, shall have been confirmed by his Majesty the Emperor of China. It shall have from then force and value for a period of fifteen years. Six months before the expiration of this term the two High Contracting Parties shall deliberate concerning the prolongation of this treaty."—From *America's Aims and Asia's Aspirations*, pp. 456—7.

frained from taking even the responsible officials into his confidence. The Russian secret was well kept. It never got between the covers of a book until the Century Co. published the Far Eastern history of the peace conference by the editor of THE FAR EASTERN REVIEW. Yet, knowledge of this instrument changes the whole force of modern Far Eastern history. Here are the facts in brief:

The United States contracted with Korea (along the lines of previous treaties with China and Japan) to befriend her in her relations with the other powers;

China successfully vetoed Korea's attempt to hold direct relations with the United States;

China and Japan waged war over Korea, Japan won the war and China ceded the Liaotung littoral, etc., and surrendered her Korean protectorate;

Russia headed the tripartite combination against Japan and compelled Japan to relinquish the Liaotung littoral;

The Li-Lobanof (Moscow) alliance between Russia and China against Japan and England;

The consequent alienation of all the chief northern ports of China, Germany seizing Kiaochau in compensation for Russia's acquisition of the Liaotung region;

The American occupation of the Philippines, a compulsory, accidental, but none the less complete reversal of previous American Asiatic policy;

The Hay "Open Door" circulars accepted and nullified by contrary secret agreements;

Japan seeks an alliance with China, Peking is prevented from entertaining Japan's proposals by all the western powers (including the United States);

The Boxer war and Russian occupation of Manchuria;

Russia, at the personal instigation of Emperor William, advances to take Korea, completion of the tran-Siberian railway and formation of the Yalu Timber (Bobradanof) Co.;

Japan (through Baron Rosen) seeks an amicable understanding with Russia;

The Anglo-Japanese Alliance (the British and Japanese answer to the Li-Lobanof Alliance);

The Russo-Japanese war and the treaty of Portsmouth, with its Rockhill-Roosevelt clauses attempting to save Manchuria to China;

Application of the Ito-Motono policy which adjusted Russo-Japanese differences on the old principle of "dividing the spoils."

The more recent facts are fairly well known and understood. They take on a different appearance when considered as the consequences of the facts here epitomized.

The key to the Chinese political puzzle has been the Li-Lobanof Alliance. The secret diplomacy of Li, Count Cassini and the subtle old masters of the "Singers' Bridge" compelled England and Japan to act in defense of their Far Eastern interests. A careful reading of the provocative correspondence carried on by Emperor William with Czar Nicholas justifies each and all of the steps that were taken by the London foreign office and the elder statesmen of Nippon. It proves positively that from first to last the policy of the "Open Door" was doomed to disappointment and to defeat.

Mr. Hay was not deceived. Mr. Choate was not deceived. Among the most interesting and instructive documents in the archives of the American government are the confidential notes and memoranda exchanged by Hay and Choate while the "Open Door" was being painted and varnished to suit the harsh extremities cold-bloodedly created by secret, old diplomacy. Choate shut himself up in his study, one evening, and wrote a remarkable summary of the actual situation. He sensed the existence of the Li-Lobanof bond. He wrote just as he felt and some of the things that he put on paper in his bold, flowing hand would have played the very devil with "the concert of Europe." Hay wrote to Adams:

> "We cannot publish all the documents without breaking off relations with several powers."

Many years later, during his brief period of retirement, Choate told the whole story to the editor of THE FAR EASTERN REVIEW, who had studied the correspondence and enjoyed the ambassador's plain language about Nicholas and William. Lord Salisbury, Lord Lansdowne and Mr. (afterwards Lord) Bertie did all that was humanly possible to meet the wishes of Hay and McKinley. American policies, however, could not and did not meet the rude necessities of the case. So the "Open Door" became the worst jest of modern international relations, and American policy in the Far East "came the cropper" that Hay, himself, had predicted in letters to Henry Adams and Henry White.

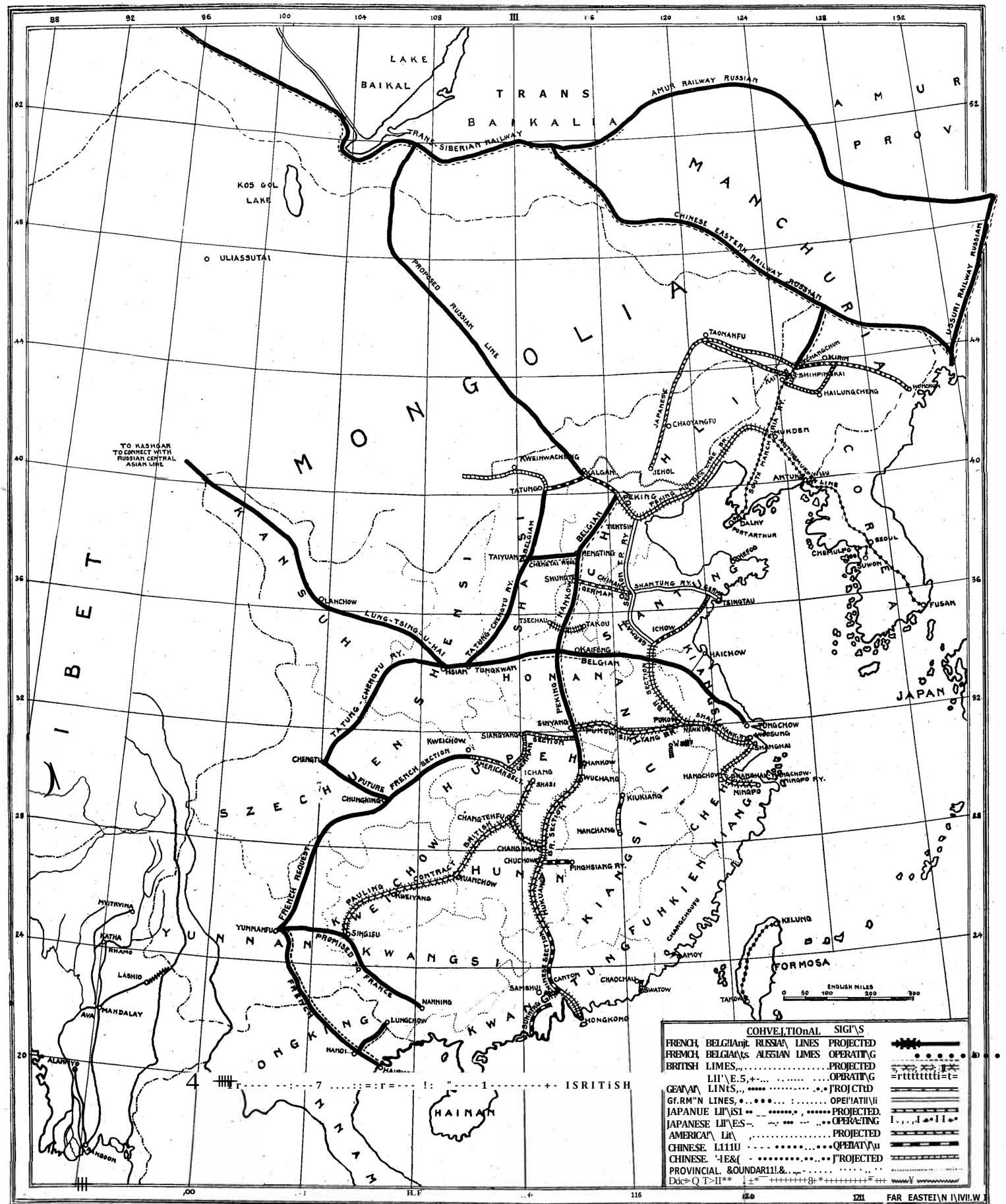
It is high time that the real friends of China take full cognizance of the Li-Lobanof Alliance and do justice to that sound British diplomacy which has met realities with practical efficiency. While American Far Eastern officials have insisted upon living in a false atmosphere of sentimental tommyrot, closing their minds against

COUNT CASSINI

Who, as Russian Minister at Peking, exercised a Dominant Influence upon Li Hung-chang

facts and romancing about an "Open Door" that never actually existed, the British have gone about their Far Eastern business skilfully and successfully. It was in an earnest effort to brush away the cobwebs and unveil that truth that the publisher of THE FAR EASTERN REVIEW printed last year for private circulation among those interested a monograph entitled *The Breakdown of American Diplomacy in the Far East*. The "breakdown" was obvious to all who attended the Paris conference. It was due to ignorance, to stubbornness and to the wilful perversity of a few men who abrogated to themselves the power to twist American policies to suit pet schemes and preconceived prejudices.

Unless her people will it, China need not be bound to the chariot wheels of the Li-Lobanof anti-Japanese and anti-British policy. The people of China can say that they were not consulted in the matter by Li or his imperial mistress, Tzu Hsi. In which direction do they seek the salvation of China? As an ally of peace or as a provocation towards a future war? If the *Waichiaopu* has nothing better to offer China than the manners and methods of the old *Tsungli-yamên* then nothing is more certain than that China's future is chockful of dangers for herself and for all the powers. If Dr. Yen's policy repudiates the rotten old legacy of the Li-Lobanof



POLITICAL RAILWAY MAP OF CHINA

This map was printed by THE F a EASTERN REVIEW, in 1914, to illustrate the political and strategical significance of the Russo-Bclgo-Franco railway contracts, which divided China by a north a d south and east and west trunk system, permitting Russia to join hands with her French Ally on the south ll,nd opening up a deep water, port at Tungchow for the Lung-Tsung• U-Hai (Central Asian) line. This map also gives a clear idiia of.the meaning of the Japanese lines in Manchuria, which are shown to be purely strat,egic frontiers aga.inst the pressure of Russia. The map will again help to an understanding of what an Allied victory, with Japan on the outside, would have meant. The entire Russo-Belgo system in North China ;would have found its outlet to deep water over the German lines, and Japan would have been surrounded on all sides by Russia. To avoid such a possibility, Japan had no alternative other than to attack Germany at once, without delay, or assistance from her Ally. She could take no chances of having Russia dem nding the right to co-operate in the Tsingtao campaign and participating in the fruits of victory. As long as the Belgian concessions are held binding with their undoubted Russian politi al connection, Japan cannot relinquish the right to partial control over.the German railway concession, which, under complete Chinese control, would be hypothecated without delay to some agent. of Rbssia, in the same manner that they handed over the Kalgan line to a Belgian syndicate operating as part of the official Russian Group.

The dottedHnes. . in south-west <China indicate the extent of·the South-western Trunk System that was offered to the Americ n· Group in 1913 by the Deputy Director'. General of the Chinese National Railway. Corporation, holding the power of attorney, Dr. Sun Yat-sen, and which was rejected. At that .time these lines did not conflict with the rights of any other Powers. They were free from internat onal political·complications, and would have provided an outlet for American capita and ind tries equal to, if not greater, than any of the European Powers. ,This was the last opportun ty presented to American capital to acquire Chinese railway rights that would have broug them in on "the ground floor" without international complications.

alliance now would be the best possible time for China's foreign minister to make that point clear. How about this, Dr. Yen ?

Every important move made by Great Britain in China since 1895 has been one of self-defense, a constant struggle to outwit *secret* Russian manœuvres by *open* moves and to preserve her own Asiatic empire. In the same way, every move made by Japan in Asia has been dictated by the law of self-preservation—the determination of a nation of men to safeguard their own empire, constantly jeopardized by the Li-Lobanof alliance.

To vindicate the truth, and in hearty appreciation of the manly frankness of Sir John Jordan—a real friend of the Chinese people—the following extracts are reprinted from the monograph above-mentioned, *The Breakdown of American Diplomacy in the Far East* :—

The Problem of Asia

"Approach as near as possible to Constantinople and India. He who establishes himself in these two places will be true sovereign of the world." These are not the words of a German strategist, but the legacy of advice that Peter the Great bequeathed to his successors ; a legacy that was followed out to the letter.

"The more powerful Russia becomes in Central Asia, the weaker does England become in India, and, consequently, the more amenable in Europe," said General Sobolev. Russia attempted no concealment of her real aim. India was, and still is, to Russians, the land of fabulous wealth.

"India, is the key-stone of the British Empire ; without India, the Empire would cease to exist. British policy in Asia must be moulded from the standpoint of its effect on the preservation of British domination in India. . . The concession of a port upon the Persian Gulf to Russia by any Power, should be regarded as a deliberate insult to Great Britain ; as a wanton rupture of the *status quo*, and as an intentional provocation to war ; and he should impeach the British Minister, who was guilty of acquiescing in such a surrender, as a traitor to his country," said Lord Curzon, the greatest of England's Indian Viceroys.

In these two quotations, the problem of Asia is laid before us ; Russia's open determination to conquer India, and Britain's firm resolve to defend her possessions. The present generation forgets that twenty, thirty years ago, Russia was the menace to world peace. Russia was then running amuck throughout Asia, slaughtering, devastating and annexing the remnants of the older civilizations. The Caucasus and Trans-Caspia were conquered, Merv was annexed and the legions of the Czar were at the Gates of Herat, the outwork of India. With Askabad as a centre, a network of Russian intrigue was spread over southern Persia to establish the Czar's supremacy on the Persian Gulf and the Indian Ocean through means of a railway. "In order to be there before the Germans," they said. Her right to such concession became an article of faith on the banks of the Neva, and was soon evolved into a sort of bureaucratic Monroe Doctrine. Northern Persia was brought under the influence of the Czar through the completion of the Trans-Caspian railway.

"Every kingdom, principality, or tribe to which Russia has extended 'protection,' has eventually been appropriated into the Muscovite Empire. Russia has seldom, if ever, permanently retreated from any spot where her authority has been established." Where her flag is once raised, it stays, unless hauled down by superior force. "The clue to her success is the intelligent ruthlessness of Russian warfare, when warfare must be waged. When she sends out a punitive expedition, no mercy is shown, even women and children being sacrificed in order to further her aim of a complete subjection. Skobeleff sounded the key-note of Russian policy, when he said "my system is this—to strike hard and keep on hitting until resistance is completely over ; then at once to form ranks, cease slaughter, and be kind and humane to the prostrate enemy. By this system, Russia has absorbed more territory, assimilated a greater number of different peoples, and fought more border wars than any other modern nation, and in the whole course of her ceaseless march there has never been a single uprising against her authority once that authority has been established. Russia's methods of warfare, her showy Asiatic magnificence, her iron hand under the velvet glove, impress the Asiatic. Her methods of wholesale slaughter which broke the spirit of Central Asia is claimed by Russians to be cheaper, quicker and more effective, and in the end, the most humane."

By this system, the Russian military juggernaut crushed out the life of the little peoples of Asia, as the first step toward the conquest of India. Only the most determined moves on the part of England halted the Bear at the Afghan frontier and prevented Persia from being absorbed, and India flanked on its most vulnerable side.

Checked temporarily in this direction, the Russians swung rounds into the Pamirs. The Hindu Kush, the natural boundary of India, was proclaimed as the frontiers of Russia in Central Asia. Chinese Turkestan was brought under the influence of the Czar ; the Ili district remains Chinese in name only. Russian agents invaded Tibet. Military exploring parties disguised as scientific expeditions swarmed over the Roof of the World mapping out the passes in the Himalayan wall through which the hordes of Russia could sweep down into the Garden of India. Britain was compelled to annex Sikkim, and, when the emissaries of the Czar won over the Dalai Lama, was again forced to act. The Younghusband expedition was the result, and Tibet forever lost to China.

Russia's direct advance on India was halted, and once more she started to clear the trail for another flank movement. Japan was deprived of the fruits of her victory over the Chinese ; the traditional enemies of England standing solidly together to further the designs of Russia.

The secret Li-Lobanof alliance entered into in 1895, following the Shimonoseki Treaty and the Imperial Rescript surrendering Japan's position in Liaotung, was the starting point of China's troubles. It was an open payment by China to Russia for compelling Japan to forego the fruits of her victory. It was China's revenge. She opened her doors to the armies of the Czar and paved the way for the subjugation of Japan. Not only did China consent to the leasing of *Kiaochao* to Russia as a naval base, but the undisputed possession of Port Arthur and Talienwan (Dalny) in the event that Russia became engaged in hostilities with any other Power. There was only one interpretation to be placed on these moves. Japan was to be crushed ; punished for daring to interfere with Russia's self-imposed monopoly of subjugating the peoples of the Asiatic mainland. Russia's breach-of-faith with her German partner in the matter of the Russo-Chinese Bank, determined the latter to forestall her in Kiaochao. China would have gladly handed over this important harbor and potential naval base to her great and good friend, Russia, in order to facilitate the latter's attack upon Japan and gratify her desire for revenge. Germany's prompt and dramatic move in stealing a march on her perfidious Ally obtained for her the 99-year leasehold on this coveted strategical position. In our haste to condemn Germany and throw stones at Japan let us not forget this initial compact between China and Russia which compelled the other Powers to move at once to protect themselves. It may be true China had a perfect right to cede her possessions to Russia, but when the exercise of this prerogative becomes a direct menace to the political existence of her neighbors, it may be indulged in only at the peril of immediate reprisals. Mexico, in the full enjoyment of her sovereign powers, may be justified in ceding a naval station to a foreign nation in some of the Lower Californian bays. The Central or South American States may, with equal right, convey similar privileges that might become a strategic menace to the American defense of the Panama Canal, but no explanation these governments could give, would deter the United States from placing a peremptory veto on the transfer and of exacting compensatory damages and guarantees for their future good-behavior.

For over a century, the full weight of Britain's diplomacy, and at times, her military and naval power, had been exerted in blocking Russia's designs to oust her from India and obtain an ice-free

port on the coasts of Asia. Yet here was China, smarting under her humiliation at the hands of Japan, gleefully handing over her three choicest ports in North China to the dreaded and avowed enemy of England. Experience had taught England that when Russia moved in Asia, it behooved her to act quickly. Japan could do nothing. The coalition against her was too powerful. She could only sit by and watch the preparations being made for her funeral. Her only friend was England, whose vital interests were also placed in jeopardy by the folly of China. This fundamental truth must never be lost sight of in attempting to understand the subsequent moves of the Powers in China. This is the beginning; the key to the puzzle.

Great Britain had declared that any Power which conceded Russia's right to a port on the Persian Gulf, would be considered as an enemy. Britain would go to war immediately to protect this strategical approach to India from its weakest and most vulnerable side. Russia on the Persian Gulf, or in the Pacific, meant that the day must come when England would have to fight for the existence of her Empire. When China opened her doors and brought Russia down to the warm-water ports of the Yellow Sea, she placed herself on the side of England's enemy. She became an active ally of Russia.

When Russia moved, her French Ally moved with her. The treaties amply prove that there existed a decided tendency to create and preserve preferred spheres in other parts of China before Germany applied the "Mailed Fist" at Kiaochao. Britain was entrenched at Hongkong. The French non-alienation agreement covering Hainan of March, 1897, was only the corollary of her Ally's moves in the North. China was caught in the Franco-Russian trap, which caused Great Britain to demand the non-alienation declaration creating the Yangtze Valley sphere in February, 1898. It has been urged that the declared intention of Germany to demand Kiaochao, precipitated the British move in the Yangtze. If we can visualize the great struggle being waged at that time with India for the prize, and the elimination of England from Asia, the picture will disclose that when China gave her two best northern harbors to Russia, and France obtained recognition of her position in Hainan, Hongkong was placed between England's two most powerful enemies. "It is from jealousy of India and to impair the position which India gives to Great Britain in the Far East that France has again embarked upon an Asiatic career, and is advancing from the south-east with steps that faithfully correspond with Russia upon the north-west," wrote Lord Curzon in 1900. The precedent for the creation of spheres of influence was therefore created by France several months before the German missionaries were murdered in Shantung. When Germany obtained Kiaochao, France followed by exacting from China a further non-alienation agreement covering South China. Eight days later (April 18, 1898), Great Britain supported Germany's rights in Shantung by renouncing all intention of connecting Weihaiwei by railway with the Shantung hinterland, thus conceding to Germany a monopoly in the exploitation of that province. The week following, after all the other Great Powers had delimited their strategical positions, Japan, supported by Great Britain, obtained the non-alienation declaration embracing the province of Fukien, which not only protected her position in the Island of Formosa, but interposed an additional buffer between Russia on the north and France on the south. On June 9, Great Britain demanded and obtained the lease to the Kowloon Territory. The inability of China to defend her neutrality, compelled Great Britain to exact this lease as the only protection to Hongkong against a land bombardment in the event of hostilities. On July 1, she obtained the lease to Weihaiwei, where her fleet had been anchored since Russia swaggered into Port Arthur across the strait. Keep in mind the fundamental facts about Russia and the subsequent events are entirely comprehensible.

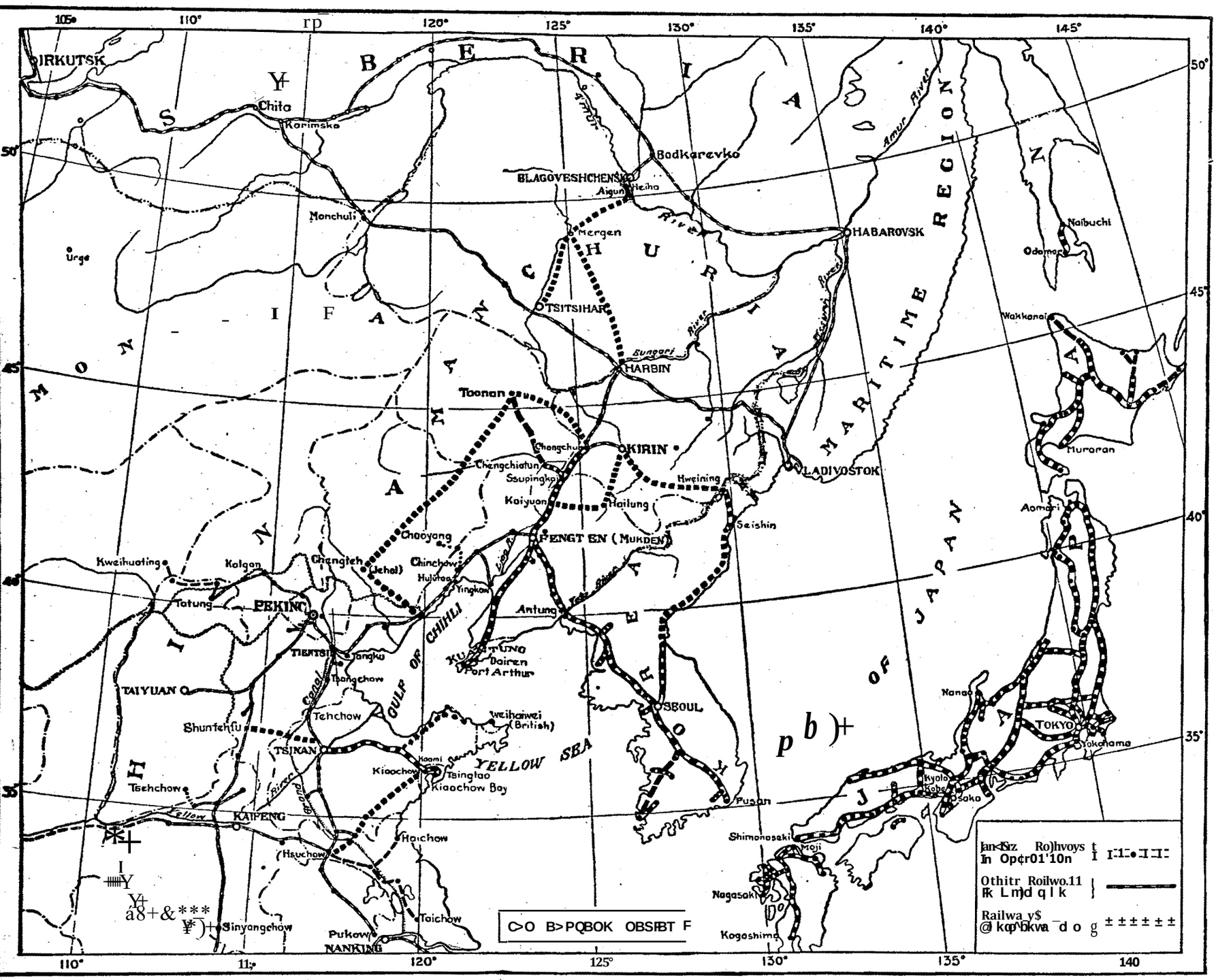
Russia was then teaching the world a new lesson. "By her forethought, energy and fertility of resource, she led the way and taught the Powers how to conquer by railways. She alone recognized how much more valuable are communications than mere army corps; how necessary in a nation's affairs is a fixed plan. Russian railways, made by Russians for Russia, ran straight across Asia from Moscow to the China Sea, from Batoum through Trans-Caspia to the western gates of the Chinese Empire, and to the Herat province—the key of Afghanistan and the outwork of India. Both in the Far East and Central Asia, the Russian railways are to be gradually carried further south—through China to the Yangtze Valley, and through Persia to the Indian Ocean. At the same time, she is pushing her feeder lines southward into Europe's sphere of influence to gain a commanding influence in Turkey and Persia. The old idea of a direct invasion of India has been for the time being, at least, abandoned, and in its stead, the plan has been adopted of commanding Central Asia, Persia and Afghanistan by means of railways and of **reaching India's north-eastern frontier by way of China.** Wherever Russia can develop cultivation she will provide storehouses for the time when she wishes to introduce an invading army. When she can develop her railway systems, she will have the means of transport ready to hand. She aims at re-creating the fertility of the Central Asian steppes and thus forming fresh bases for further advances." Thus wrote Archibald Colquhoun in 1900.

Russia did nothing by halves; she worked on a big scale with fixed objects in view. "Run back over Russia's far-sighted and patient policy, which has always looked ahead and considered the needs of the Russian people a century beyond the present moment, and perhaps an explanation will spring from these combined considerations." Halted on all sides by the swift and certain strokes of British diplomacy backed by a naval supremacy that no one Power or coalition of Powers dared to question, she resorted to subterfuge to accomplish what could not be done openly.

Once again Britain scored by binding Russia through the Scott-Muravieff agreement to confine her activities north of the Great Wall of China, and again, Russia broke her pledged word by employing Belgium, operating with the financial support of France, to extend her tentacles toward south China, and the coveted north-east borders of India. "It has been abundantly proven that Russia's pledges were given merely as a matter of diplomatic expediency to be broken whenever convenient." Her policy was to take advantage of the slightest opportunity offered. Merv was annexed when England was busy in the Soudan; the Central Asian railway was pushed up to the borders of Afghanistan. Tibet nearly fell into her maw during the Boer war. Manchuria was occupied during the Boxer troubles, and Mongolia declared independent when China was in the throes of a revolution. Russia never overlooked a trick.

When Russia moved in Asia, France, her Ally, moved with her. France was helpless, bound to Russia's chariot by chains of gold. "Between the French Republic and the Russian Autocracy exist the most perfect and smoothly working governmental and diplomatic understanding of modern times. It is a singular illustration of the influence of hatred and interest in making a combination between two peoples unlike in temperament, ideas and methods. Their alliance was born of their common fear and hatred of Germany and England—of the numerous conflicts of German and English interests with Russian and French interests. And so, in their foreign policy, and particularly in their Oriental diplomacy, they might almost be said to work as one government. So far as the rest of the world is concerned, French diplomatic agents in Asia operate in understanding with Russia; and the reverse is also true." These are the words of Senator Albert J. Beveridge in his book on the "Russian Advance" written in 1903. Every mile of Russian railways in Asia was built with French money; when Belgium entered the Chinese field on behalf of Russia, French capital subscribed to eighty per cent. of the loan issues.

So, when England, fighting for the life of her Empire, called checkmate time and again to Russia's moves on the diplomatic chess-board, the latter turned to little Belgium to play her game secretly. Russia's program was to divide China in half by a north and south railway that would link her Manchurian and projected Monogolian systems with the lines of her French Ally on the south,



MAP OF NORTH CHINA

showing the railways contracted for with Japanese financiers, as well as the lines contracted for with the Rueso-Asiatic Bank, in northern Manchuria.

A study of this map will disclose the true significance of the proposed Japanese railways in Manchuria and Inner Mongolia. Instead of being aimed at Peking and the domination of north China, they are pnrely strategic lines, the outer defenses of Japan against the advance of Russia from her preponderating superior positions on the north and west. 'Fhe projected lines from the sea at the Korean border to Kirin, Changchun and Taona.n, mark the northern line of defense. The strip between these lines and the Chinese East.em railway is neutral ground, the no-man's land between the two fronts. When llussia extended her" protection" to Mongolia in 1912 and provided her armies with a free aecellS to Japan's exposed west,ern front, the latter was compelled in self-defense, to demand Die rights to the railway from Taonan to Jehol. The Japanese subsequently advanced funds for the Peking-Kalgan-Tatung lint„ which brings this also under their influence. The lines from Harbin and Tsitsihar to Blagoveshchensk represent the Ru"sian strategic Jines conceded in 1916 by China to the Russo-:Asiatic Bank, compelling Japan to strengthen her position- in the south.

The weakness and inability of China· to protect her capital and northern approaches from a Russian advance, compels Japan to step into the breach for her own security. The projected railways are therefore not only essenti&l for the protection of Japan's position, but imperative for the defense of China. They should be constructed at once, and jointly defended for the common interests, and, as the first move to a deeper penetration of Mongolia that will open up this vast empire to colonization by tho yellow race. ,

This map will also show the_ compelling motive behind Japan's entrance into the war. An Allied victory, with Japan on the outside, would have given to Russia the rights held by Germany. The Russian strategic railway system would have debouched upon Shantung from the Shuntehfu-Tsinari lino to Tsingtao, while the Central Asian trunk line would have followed the Hsuchow-Kaomi project to the same deep water terminus. Russia would have dominated Shantung. Japan would be surrounded on all sides by the strategic railways of her dreaded enemy, and in time, would have had to bow to the inevitable and withdraw from the mainland, or make her last stand for national ex:istence in Southern Manchuria or Korea.

and so bring their armies nearer to the coveted north-eastern frontiers of India. A Belgian syndicate backed by French capital and in partnership with the Russo-Chinese Bank, obtained the great Peking-Hankow railway concession after the Chinese had solemnly promised Great Britain that Russia would not be admitted to participation in the deal. At the same time the Russian combination acquired the rights to the Chengtai and Pienlo railways, as the first links in other grandoise schemes for the subjugation of China. Again China willfully played the Russian game and brought her another lap nearer her goal, and, once more, Britain countered and compelled China, under threat of an ultimatum, to concede compensatory damages, that would enable her to hold her strategic position in central China against the onward march of the Bear. The set determination to maintain at all costs her strategic position is disclosed in the curt, concise instructions to the British Minister at Peking when the truth was learned as to the Russian participation in the Belgian concession. "You are authorized to inform the *Tsungli yamên*, that unless they agree at once (to the demands for compensatory railway rights) we shall regard their breach-of-faith concerning the Peking-Hankow Railway as an act of deliberate hostility against this country, and shall act accordingly. After consultation with the Admiral, you may give them the number of days or hours you may think proper within which to send their reply." There was no trade policy in such a note. It breathes the spirit of a government grimly determined to resort to instant hostilities against the deceitful action of China in opening her doors to the enemies of England in order to facilitate their advance upon India. This is the reason underlying Britain's demand for recognition of her predominance in the Yangtze Valley. It is her one bulwark against the slow, cunning, moves of Russia to oust her from India by an attack through the territories of China. As China cannot defend herself or preserve her neutrality and guarantee the British Empire from attack, her territory becomes the strategic frontiers of India; England must dig herself in, in the Yangtze regions.

Once more England called check by placing the Yangtze valley between India and the Colossus of the North. Then the Americans broke into the field and thwarted her well laid plans. The American-China Development Company, holding the concession for the southern half of the great north and south trunk railway from Hankow to Canton, permitted the Belgians to obtain control of its stock in the open market, and were about to step aside and hand over the administrative control. Russia almost attained her object. Her Belgian agent controlled the line from Peking to Hankow, and the Americans made them a present of the southern half to Canton. Is it any wonder that the campaign was initiated to oust the Americans, and the British press clamored for the surrender of the concession? Once again, the British position was menaced, and again, by heroic diplomatic teamwork, they obtained a hard and fast option on the rights to this line; a right they have not sacrificed in its internationalization under the Hukwang Loan.

While her Ally and Agent were carrying her plans into execution in prohibited spheres, Russia was playing an energetic game of her own in the north. The Boxer uprising provided her with opportunity to flood Manchuria with troops and entrench herself. Harbin rose like a boom town on the broad expanse of the Manchurian prairies and became the Far Eastern capital of the Czar, the strongest military encampment of Eastern Asia; Port Arthur was hurriedly transformed into an impregnable naval base and the city of Dalny created over night like an Arabian Night's Dream? When the Allied Powers were negotiating the Boxer terms, Russia, working independently, was forcing China to sign a separate secret treaty which would have clinched her domination over Manchuria and prohibited China from constructing railways in any of her provinces bordering on the domains of Russia? Again England had to act quickly to save the situation. This time (October 6, 1900) she entered into an alliance or understanding, not with the United States, the champion of the Open Door policy, but with Germany, in which the two countries were to stand together to oppose Russia's covert attempt to take advantage of the situation for selfish ends. Again, China was about to play the Russian game and sign the secret treaty. Only under pressure from the other Powers, did she finally make known the extent of Russia's demands. Backed by their support, she refused to sign and Russia withdrew.

Harassed and beset on all sides in Asia through the activities of the coalition seeking to undermine her position in India, and handicapped through the incompetency and inability of China to protect her territories against the menace from the North, Great Britain threw her fortunes in with Japan, and in 1902 signed an alliance with the rising Oriental Power. This combination of Democracy with an Oriental Autocracy has been severely criticised and condemned, but an impartial study of the diplomatic game in Asia will fully justify its necessity. The gold of Republican France was supplying the motive power for the Autocratic Russian machine in Asia, and, secretly encouraged by Germany, the combination on one side, was bent on absorbing Persia in order to attack India, and on the other, snuffing out thein dependence of Korea as the first step in the throttling of Japan. Britain was isolated. The great White Powers of Europe were combined against her. The instinct of self-preservation threw Britain and Japan together against a common enemy. It may have been an unholy alliance, but from the viewpoint of practical diplomacy it was absolutely justified, and, harp as we may, it stands as the one guarantee of a permanent peace in the Far East, the one formidable check to the never changing policy of Russia, the one safeguard for the defense of the British Empire and the future existence of Japan. Once again, the Open Door doctrine which could not be relied upon to check Russia, had to give way to a more practical instrument of defense. The alliance worked, it accomplished its purpose. Raising her paw from the vantage point presented by China to snuff out the life of Korea, the Russian Bear received the first set-back in her long and bloody career of annexation of little nations. The paw came down upon the upraised bayonets of Nippon. Discomfited, sore, surly and revengeful, Russia withdrew temporarily from South Manchuria to her second line of defense north of the Sungari, still holding her ground within the territory of neutral China.

Japan was compelled to fight for her life. Only by a superhuman effort, a terrible sacrifice of blood and treasure, was her independence assured and the menace hurled back to the frozen fastnesses of the north. Who was to blame? Japan did not invite the war. She fought China ten years previous, and imposed terms deemed essential for her future protection against aggression, by insisting on the cession of the Liaotung peninsula. Japan followed the same law in imposing terms upon China that has since been followed by the Great Powers in their peace negotiations with Germany. This insurance against attack was denied to her by a coalition headed by Russia intent upon her subjugation. China willingly allied herself with and handed over to Russia what had been denied to Japan, not only as a grateful present for services rendered, but to be revenged upon her late antagonist. Russia lost no time in pushing her advantage. Manchuria was flooded with troops. Harbin, the administrative centre of the railway system, became the Far Eastern military capital of the Czar. From this vantage point, within the confines of China, and from the strongholds of Port Arthur and Dalny, Russia concentrated her energies toward the absorption of Korea and the annihilation of Japan.

Before the Chino-Japanese war in 1895 it may be said that Russia had no army in the East. Not until work began on the Chinese Eastern Railway did her troops begin to pour into Manchuria. The Boxer outbreak in 1900 provided an opportunity and at least 60,000 were marched into the province. In another year this was increased to over 150,000 and during the next three years this number was doubled. China was fully aware that her territory was to become the scene of a terrible war. Russia was manœuvring to extend her influence over Korea. China had gone to war with Japan in 1895 over Korea. She made no move to oppose Russia operating from within her territory. China cared nothing about Korea as long as vengeance was visited upon Japan. Her weakness, venality, duplicity and playing one Power off against the other to save herself, bore its fruit.

And when the terrible sacrifice was completed ; when the two armies stood face to face in the bleak desolate regions of the Sungari, far from their bases of supplies ; broken and unable to carry on, the line was then delimited which marked their future strategic positions within the neutral territory of China. As long as Russia maintained her position in Northern Manchuria and held Harbin as a base, Japan dared not withdraw. To have retreated and surrendered her strategic footing gained at such a terrible cost, would have again handed over the fruits of victory to Russia. China would have once more opened the flood gates for the armies of the Czar to return to Mukden, Port Arthur and the banks of the Yalu.

Russia held fast to her strategic position in Manchuria and initiated those tremendous preparations for a war of revenge which kept the Far East in a state of inquietude since 1905. Hardly had the ink dried on the Treaty of Portsmouth, when she commenced feverish activities to retrieve her lost prestige and position in Asia. Until Japan was humbled, Russia could no longer safely lord it over the tribes and peoples of Asia. The peace treaty stipulated that the Chinese Eastern Railway, traversing the neutral zone of China, could not be employed for strategic purposes. Vladivostok, the Primordsk, and the Ussuri regions, were thus cut off from direct military contact with the rest of Siberia and Russia. Her eastern strongholds were isolated.

The war had been lost to the armies of the Czar because they tried to fight it at the end of four thousand miles of single-track railway, with their base of supplies in European Russia, and the line of communication broken during the long winter by the frozen expanse of Lake Baikal. Russia set to work to retrieve her mistakes. Huge appropriations were at once made for the construction of the Amur railway that would connect Vladivostok with the rest of the empire through Russian territory. This circumvented the clause in the treaty closing the Chinese Eastern railway for strategic purposes. The Trans-Siberian line was double-tracked. The Circum-Baikal link was completed. Vladivostok was strengthened and made impregnable. The Ussuri region was colonized from southern Russia and the country criss-crossed with military roads. Trans-Baikalia was opened to settlement. Industries were created, agriculture encouraged and everything done to make this region a base of supplies for the forthcoming struggle. Russia was faithfully carrying out the policy so strikingly predicted by Colquhoun several years previous. There was no mistaking the purpose of Russia.

Japan stood amazed at these preparations for revenge. She was almost bankrupted by her struggle, yet compelled at all hazards to keep pace with the activities of Russia. Her armies were increased time and again, she hypothecated her last resources to strengthen her position. This is the sole reason for her militarism ; obeying the same law of self-preservation that compels Britain to maintain her naval supremacy and France her military organization. Japan may be a military nation, she may have faithfully copied and admired the German system, but this does not warrant the accusation that she is on conquest bent. If Japan goes to sleep and listens to the siren song of the pacifists, her national existence would not be worth a moment's consideration.

Because of China's inability to defend her own or her neighbor's territory, and the venality of her statesmen who allied their country with and admitted Russia into Manchuria, Japan was compelled to fight one terrible war for independence. To preserve this dearly bought security, she was again forced through the inexorable exigencies of the military situation in Manchuria to violate her pledged word and annex Korea and maintain her strategic foothold within China's territory. Korea borders on the Maritime Provinces of Russia, offering a free and unobstructed passage to the armies of the Czar when again ready to move against Japan. The snuffing out of Korea's independence which constitutes one of the tragedies of recent years, was inevitable. If Japan had not stepped in and annexed the peninsula, nothing would have prevented Russia from seizing the first opportunity to occupy the territory as a base for her operations against Japan. If Japan had meekly given up her position in Manchuria and respected the independence of Korea, she would simply have invited her own subjection ; she would have committed *hari-kari*.

"The rights of smaller and weaker nations fade away and disappear when their governments through incompetency, corruption and general ineptitude endanger the life of stronger, better organized and developed states." The national life of Mexico would be snuffed out in a twinkling, if her present disorganized condition was ever employed by Germany or any other Power as the bridge over which our own independence was threatened or attacked. One such lesson is enough for any virile nation. As long as Russia holds Northern Manchuria and the Primordsk, Japan must, in self-defense, dig herself in in the south. It is the punishment that China is now receiving for her double dealing, and the price Korea pays for her continued disorganization and intrigues which invited her absorption by Russia.

Let us return to the chess-board. Russia very naturally attributed her defeat to the strong support tendered to Japan by Great Britain. She bided her time and awaited the opportunity that was sure to come. Then the Americans re-entered the labyrinth of Far Eastern politics by proposing the neutralization of the Manchurian railways, ignoring the tremendous struggle for Empire that was going silently on in the depths of Asia The story of how this was rejected, is fresh in the memory of all. Then, finding someone she could play off against the others, China utilized the Americans to break the hold of Russia and Japan in Manchuria by conceding to the American Group an agreement for financing the Chinchow-Aigun railway. It was a foregone conclusion that it would be blocked, but sympathy for China caused Americans to take over the rights, and, by bringing in a British contractor to construct the line, hoped to win over Great Britain. The line was aimed at Japan's position, and it was hoped that British interests would influence British official support and take the ground from under Japan's opposition.

Who defeated this scheme, which, on its face, was a legitimate enterprise, well within the treaty rights of the United States to undertake and the sovereign power of China to initiate ? It was not Japan. Backed by the full weight of French diplomacy, Russia emphatically refused to permit its construction, applying the principle that any Chinese railway that touched or paralleled her boundaries became a strategic menace to her military position. Russia went back to the principle that she tried to force upon China at the time of the Boxer troubles. The Chinchow-Aigun railway opened up a new line of communication from the south aimed at the heart of her Amur region, a highly important military alley that would fall into the hands of Japan at the first sign of renewed hostilities. Under the terms of the Portsmouth Treaty, Russia was prohibited from employing the Chinese Eastern line for military purposes. The new Amur railway then under construction, constituted her only line of communication within her own territory connecting Vladivostok and the Maritime regions with the rest of the Empire. With the Chinese Eastern line closed to military movements, the proposed new Chinchow-Aigun line therefore opened a clear and unobstructed passage for the armies of Nippon to strike at the most vital point in her new line of defense. In the event of Japan reaching the banks of the Amur, the whole Russian Empire east of Baikal would be at her mercy. Naturally, Russia, who thinks only in terms of military strategy, stubbornly refused to budge from her position. Japan was willing enough for the line to be constructed, provided she was permitted to participate, but this was rejected by China and America. It was Russia, and Russia alone, who blocked the concession. She called checkmate to England, and in so doing, established the principle that China cannot construct railways within her own boundaries which might become a strategic menace to her neighbors. The other great Powers did not oppose the imposition of the new doctrine, clearly foreseeing that the time would arrive when, because of the continued weakness of China, they would be compelled to invoke the same principle in defense of their own interests.

Russia then sat back and awaited the next move. This came with the Chinese revolution, providing the ever watchful Bear with another opportunity to shove his paw deep into the Chinese honey-

pot. Mongolia was declared independent and brought under Russian influence. The continued disorganization of the Chinese invited this rape of their territory. The strategic position of Russia was strengthened. The Cossack was brought to the Great Wall and Japan's position in south Manchuria outflanked. The weakness of China was again paving the way to the undoing of Japan. The amputation of Mongolia was simply another strategic move on the great chess-board of Asia which permitted Russia to set at naught the watchful preparations of Japan and facilitate a flank attack on her position from the west and south-west. Russia moved rapidly. No sooner had Mongolia been declared independent, and the Hutuktu and his Lama ministers bound hand and foot through the terms of a treaty recognizing Russia's protectorate, than negotiations were opened in Paris for the immediate financing of railway lines within the new state, under a Russian guarantee as to principal and interest on the loans. This told the interested Powers that Russia was again starting her plan of conquest or annexation by railways, leading up to the complete absorption of Mongolia. This Russian move forced Japan to extend her activities into Inner Mongolia. Here we have the sole reason for Japanese military operations in these regions; the compelling motive influencing Japan to embrace this region within her sphere of interest. If Japan refrains from pushing her influence deep into Inner Mongolia, Russia will employ the territory, when the time is ripe, to strike at Japan in Manchuria from her most vulnerable side. Once Russia gained the whip-hand in Mongolia, she applied her pet policy of closing the country to railway construction and Chinese colonization. Mongolia became a closed sphere, nominally independent under the suzerainty of China; in reality, another hidden empire to screen the forward moves of Russia toward her goals in India and Japan; a land that the Yellow Man might not live in. The rest of the world slept. The Czar was advocating World Peace, his Ministers were preparing for war. Russian policy never changes. She again scored.

Let us return to the situation in Tibet. The Younghusband expedition was sent to Lhasa in 1904, ostensibly because of a failure on the part of China to comply with the trade regulations agreed upon in 1893, in reality, to forestall Russia. As a result of the occupation of the sacred capital of Bhuddism, the Lama Hierarchy was forced to sign a treaty providing for the non-alienation of Tibetan territory to any foreign Power; the prohibition of foreign intervention in its affairs; the exclusion of all political agents or representatives; the interdiction of the revenues of the country being mortgaged, and, finally, closing the door to railway, mining and other development concessions. To this agreement, China was forced to assent in 1906. Russia also reluctantly accepted the accomplished fact and entered into an agreement with Great Britain to recognize the above conditions. Tibet was converted into a water-tight compartment, a buffer state, created to protect India against the forward march of the Bear. Britain scored. During the revolution of 1912, the Chinese were driven out of Tibet, and on January 11, 1913, her independence was declared by concluding a treaty with the Hutuktu, the ruler of Mongolia, who had passed under the thumb of Russia. In this, Russia scored, compelling Great Britain to call upon China for the negotiation of a new agreement concerning Tibet.

The struggle for Empire, for control of India, assumed a new phase with the return of Russia during the Chinese Revolution. Checked in her frontal march upon India through Tibet, Russia again retreated into the background and employed her Belgian agent and French financial partner to open up an oblique road through China. The Belgians appeared on the scene during the revolution. One of their first transactions was to advance a loan secured on the Kalgan railway, a line that Russia had kept her eyes on for many years, the only pass through the mountain wall between China proper and Mongolia. Again Russia scored and circumvented the Scott-Muravieff understanding, and Britain countered by having the Belgian loan absorbed into the general Reconstruction Loan advanced by the Consortium. When Russia was admitted into the Consortium the Belgian syndicate appeared as the official Russian Group. One of these Belgian syndicates then obtained the concession for the great trunk-line from the sea at Haichow to Lanchow and beyond in the Kansu Panhandle; the centuries-old highway into Central Asia. This was the first half of the great trans-Asian line which would ultimately connect with the Russian system in Central Asia. The original deep-water terminus at Haichow was then shifted to Tungchow, located on the Yangtze River near its mouth. The Bear was at last in the Yangtze, squatting on the north bank and twiddling his claws at the discomfited Lion across the river at Woosung. Russia had not only sneaked into the Yangtze Valley, but had set at naught all the carefully laid plans of Britain in Tibet, by flanking this territory all along its northern borders. The work of a century of British diplomacy and foresight was being wantonly destroyed by a group of Chinese officials selling their country piecemeal to the Czar. Britain woke up with a bang.

Hardly had the ink dried on this astounding contract, when the Chinese officials capped this piece of diplomatic stupidity by handing over to another Belgian syndicate, leagued with Russia, the concession for a through north and south trunk line connecting Tatung on the Mongolian border with the city of Chengtu, the provincial capital of Szechuan, commanding the natural passes from China into Tibet from the east. At Chengtu the Russo-Belgic combination at last linked up with the lines of their French partner from the south. The dream of Empire was being realized. Mongolia had been cut away from China, and hurried steps were being taken to solidify the Russian position by means of new railways that would bring the armies of the Czar down to the exposed western flank of Japan in south Manchuria. China was cut in half from east to west by a line that would run from Central Asia to the sea at the mouth of the Yangtze, paralleling the northern borders of Tibet and creating a southern military boundary for Mongolia. From north to south China was split in twain by the Tatung-Chengtu-Yunnan-Yamchow combination commanding the principal roads and passes into Tibet from the east and north-east. This line would bisect the east and west line and the two merge into one in the fertile Wei River Valley, the cradle of China's civilization. Sianfu, the ancient capital of China, would become the central base of future Russian operations. The implements for throttling British rule in India, through control of Tibet had been forged. At every step China faithfully adhered to her alliance with Russia surrendering the use of her territory to menace the position of Britain in India and exposing Japan to the mercy of the Czar. Is it any wonder that Japan and Great Britain came closer together for the protection of their common interests?

Great Britain had no choice left to her. She closed the Yangtze. She announced her intention so that all the world might heed the warning. There was no mistaking the words of Sir Edward Grey in his memorable speech before the House of Commons on July 10, 1914. The United States government had refused to go beyond words in its interpretation of the Open Door. With Britain it was a matter of life and death, and no matter how willing she was to open the Yangtze Valley to all, the action of the Chinese government in inviting the Russians south of the Great Wall and endangering the existence of the British Empire, compelled her to discard ideals before the stern necessity of self-preservation.

China had placed herself in the jaws of a giant Russian nutcracker; she sold her birthright in Manchuria, Mongolia and Hsinkiang to achieve her revenge upon Japan. She had become a menace to herself, a formidable danger to the existence of others. When Britain announced that the Yangtze Valley was closed, France understood that the play was over and hurriedly slammed to the door in Kwangsi and Japan later presented the Twenty-One Demands in order to consolidate her position in Manchuria and Inner Mongolia.

Not only were India and Tibet menaced by the Belgo-Franco-Russo strategic railway system, but by Russia's occupation of Mongolia, Japan's position on the mainland became absolutely untenable. Reference to the map will clearly show that the main Belgo-

Franco-Russo lines all debouched upon Shantung, enclosing that province and Peking in a Russian trap, handing over to the armies of the Czar all the territory north of the Yangtze Valley.

We can now understand Japan's determination to oust Germany from Shantung. If Japan had remained neutral or semi-quiescent, Russia sooner or later, would have insisted upon the right to lay siege to Tsingtao from the land side, sending her troops through Chinese territory for that purpose, or, in the event of an Allied victory with Japan on the outside, Russia would have claimed the German rights in China which would have provided her strategic railways with a fine ready-made deep-water terminus at Tsingtao, instead of Tungchow on the Yangtze. Under such conditions, Great Britain would have been compelled to yield the point to save her position in that region. It meant another step forward for the Bear in Asia. The Central Asian Lung-Hai-Tatung-Chengtu system would have found its northern outlet to the sea over the rails of the Russo-Franco Chengtai line, and thence over the German Shunteh-Tsinan and Shantung railways to Tsingtao. The terminus of the Lung-Hai line would have been diverted to Tsingtao over the German Kaomi-Hsuchow project.

With Russia entrenched in Mongolia and northern Manchuria and heir to the German rights, Japan would have been surrounded and compelled to withdraw from the mainland and take her last stand, make the last fight for her existence, in Korea or the Japan Sea. It is rather tiresome to read Chinese and foreign surmises as to the reasons which prompted Japan to enter the war and attack the German stronghold at Tsingtao. She had no choice in the matter. An Allied victory with Japan on the outside meant the domination of Shantung and north China by Russia. Japan did the proper thing. Instead of heaping abuse upon the heads of the Japanese military leaders and accusing them of entering the war for territorial expansion in pursuit of a set policy of imperialism, we should acknowledge the superior military genius of men who knew best how to safeguard the existence of the empire entrusted to their keeping. Militarists have no ideals. Their duty is to defend the nation and lay plans far in advance for any possible contingency.

The players were keenly intent upon their game during the war. Great Britain has taken advantage of exceptional opportunities to drive her frontiers and influence deep into Central Asia against the day when the Bear will once more start upon his devastating march. Democracy may prevail in Russia; again, it may not. Britain is taking no chances in a game that has been going on for over a century. There is no assurance that Russia will not take it up where she left off. The weak spots in the defense of India have been strengthened. Persia is another Egypt under the protection of Great Britain. She pays the penalty for refusing to place her house in order and provide protection to the British Empire.

Immediately following the ratification of the Persian treaty, on August 18, 1919, came the announcement that Great Britain and China reached an agreement in regard to Tibet. The Chinese Foreign Office agreed to grant autonomy to Tibet while retaining suzerainty over that country; and the proposal met with the approval of the British government. China will be relieved of the burdensome and hitherto impossible task of keeping Tibet in order; and the British desire for the maintenance of Tibet as an autonomous buffer state is realized. In other words, Great Britain finally counter moved against Russia in Mongolia, applying the identical tactics. Tibet is declared an autonomous, independent state under the suzerainty of China, and, on the side, Britain has separate understandings with Tibet which places the newly created state under her protection. Just like Mongolia, the same as Persia yet not a note of protest from the Chinese.

In the east, Japan was desperately trying to hold down the situation and extend her foothold in northern Manchuria, Mongolia and Siberia. She has taken advantage of every opportunity to fortify herself, and extend her front line trenches as near as possible to the coming menace. What could not be done with shovels and trench tools, was accomplished with gold. Russia got a taste of her own medicine; her methods were turned against her; Japan purchased every right the Chinese mandarins would part with.

Japan did what any other nation placed in the same position would do under the same circumstances. The Northern and Southern leaders were on their knees begging Japan for ready cash to fight each other with. The Northern, or militarist government, was recognized by the Powers; it had the power to contract loans and hypothecate resources. Japan went the limit in obtaining control over rights deemed essential to her future security against the "come-back" of Russia. She did her work well. She confirmed her strategic position in Manchuria and Inner Mongolia by a definite railway agreement and paid down $10,000,000 bargain money to clinch the deal. She loaned funds for the Peking-Kalgan-Suiyuan railway and obtained an option on the future financing of this strategic line of the Inner Mongolian defenses. She outwitted Russia, planting herself squarely across the path of the Bear. Russia played a magnificent stroke when she separated Mongolia from China and outflanked Japan's position in south Manchuria. Japan has quietly, impatiently at times, awaited her opportunity and repaired as far as possible the damage caused by China's weakness.

The struggle for empire, for the right to live and exist is still going on within the hidden confines of Central Asia. There is no power or combination of Powers that can dislodge Japan from her position. She will fight to a finish and go down to oblivion before she will again leave the door open and the road clear for the Bear to walk through. It is time for Americans to wake-up and face the realities of the situation. Instead of heaping abuse upon Japan for protecting herself against attack, Americans should applaud the genius of statesmen who directed the moves, in the same manner, that, in the past, they went into rapturous admiration over the marvelous advance of Russia, and insist upon the application of the same policy where their own interests are concerned.

The author speaks for a handful of Japanese gold!

Judge Gary Denounces the Warmakers

NEW York, December 16—Judge Elbert H. Gary, President of the United States Steel Corporation, speaking at the annual dinner of the Japan Society here, denounced what he termed the vicious and deliberate efforts to foster trouble between the peoples of the United States and Japan. Should there be a clash between the two countries, he said the people of the United States would be more to blame than the Japanese.

Judge Gary asserted that he likes to trust the honesty and integrity of the Japanese, and that they are building warships as a last resort against an attack without reason.

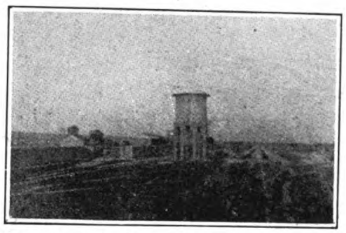
Baron Shidehara, the Japanese ambassador in Washington, and Mr. Roland S. Morris, the American ambassador to Japan, were among the guests. Mr. Morris remarked that Baron Shidehara and himself are working together at Washington, not negotiating a new treaty, but, with the consent of their respective governments, they had discussed frankly and fully certain questions which had arisen between the two countries, trying to understand each other's point of view, and striving to find a solution which they may submit for the consideration of the two governments. They are doing this, said Mr. Morris, confident in the belief that there are no questions which, approached in a generous spirit of candor, are not susceptible of an honorable solution, giving evidence of the friendly feeling between the two peoples.

Lung-Tsing-U-Hai (Lunghai) Railway Agreement

The following is the complete text of the Lunghai Railway agreement :—

THIS Agreement was concluded at Brussels on the first day of May Nineteen hundred and twenty :— The Contracting Parties are : (1) His Excellency Mr. Sao Tseng-sze, general manager of the Lunghai Railway (Lung-Tsing-U-Hai), acting for the government of the Chinese Republic, by virtue of its authority, on a special mission which has been entrusted to him by his government, in the first part. (2) The General Company of railways and tramways in China, Belgian Anonyme Societe, head office Brussels,

Lotung Railway Station at Honanfu



R. R. Yards at Honanfu, Lotung Railway

Lotung Trestle near Honanfu

represented by M. François Empain and M. Jules Jadot, Administrators, called the General Company, in the second part. (3) The Nederlandsche Maatschappi Voor Havenwerken, Societe Anonyme Neerlandaise, head officer Amsterdam, acting in its own name and for the Dutch group called the Netherland Syndicate for China, represented by Mr. Robert de Vos, duly accredited and called "The Syndicate Neerlandais," in the third part.

1. The contracting parties engage themselves to co-operate on the following conditions and reservations, to carry out the loan contract of the 24th September 1912 between the General Company and the Chinese government for the construction of a railway from Kansuh to the sea and a marine port.

This co-operation will be limited to the marine port, and to the section between the sea and Sanchow, or such neighboring points of Sanchow on the Yellow River up to the rapids of Sanmen which will be chosen as the terminal point at the west. Its ramifications can be extended only in the event of a new agreement being made, to the section to be built on the western point connecting with the Yellow River.

2. The General Company and the Syndicate Neerlandaise are in charge to issue the loan for the Chinese government, which will be necessary for the carrying out of the work, the ordering of material, the financial service and the re-imbursement of the loans already issued or to be issued.

3. From now on it is agreed that : (1) The General Company is authorized to issue at different periods a nominal total of 150,000,000 francs, the half at least is to be used for the west section, between the actual terminus (Kwang Yin Tang) and the Yellow River, or for the loans required during the construction of this section.

(2) The Syndicate Neerlandaise is authorized to issue at three periods the nominal amount of 50 millions Netherland florins, of which half at least is to be used for the port and section between Tsinpu and the sea.

(3) If the amount is not sufficient for the object of the present agreement (Art. 1 above) the Chinese government will authorize the General Company and the Netherland Syndicate to issue more money.

(4) All the loans which will be issued by the General Company and the Syndicate Neerlandaise by virtue of articles 2 and 3 above, will be to the regime of this present agreement, except those of interest, length of redeeming, and issue conditions, which will be fixed specially for each issue.

(5) This loan will be governed by the agreement of the 24th September 1920 (with any changes which would meet with the approval of the Syndicate Neerlandaise) except the special explanatory complete or subsidiary conditions mentioned in this present agreement.

They will be placed in every respect in the same category as the loan issued in 1913 and the treasury bonds issued in 1916 and 1919. They will have all the rights, privileges and guarantees as the agreement of 1912 recognizes to the loan, specially the regime established by the agreement of 1912 for construction, exploitation, use of funds, and other debts, will be applied to the loans issued by virtue of the present agreement.

(6) In the general interests of the railway, the principle of unity of the Lunghai enterprise is to be maintained. The principle direction and the general interests of the foreign interests will be entrusted to the General Company, without prejudice of right or claim, which will occur from the execution of the present agreement.

(7) In what concerns the division of the railway at the east of Tsinpu and the marine port, a special regime will be established by virtue of which the foreign employees engaged to work there will be engaged by the Syndicate Neerlandaise. These employees will be placed under the orders of the chief engineer, who will entrust the discipline and work service to the chief of the eastern service.

The chief of the eastern service can only be dismissed in the interests of the company and with the agreement of the Syndicate Neerlandaise.

(8) Technical work to be made in Europe for the eastern division will all be performed by the company general in matters concerning the railway line, but the work relative to the construction of the port will be entrusted to the Syndicate Neerlandaise at Amsterdam. Although it is only a provisional question of constructing a western line—the survey of the port will be taken up again as soon as possible.

(9) The construction of the port will be given to the contractor chosen by the Syndicate Neerlandaise and carried out according

to the plans and specifications approved by the chi0f engineer and the general management of the railway.

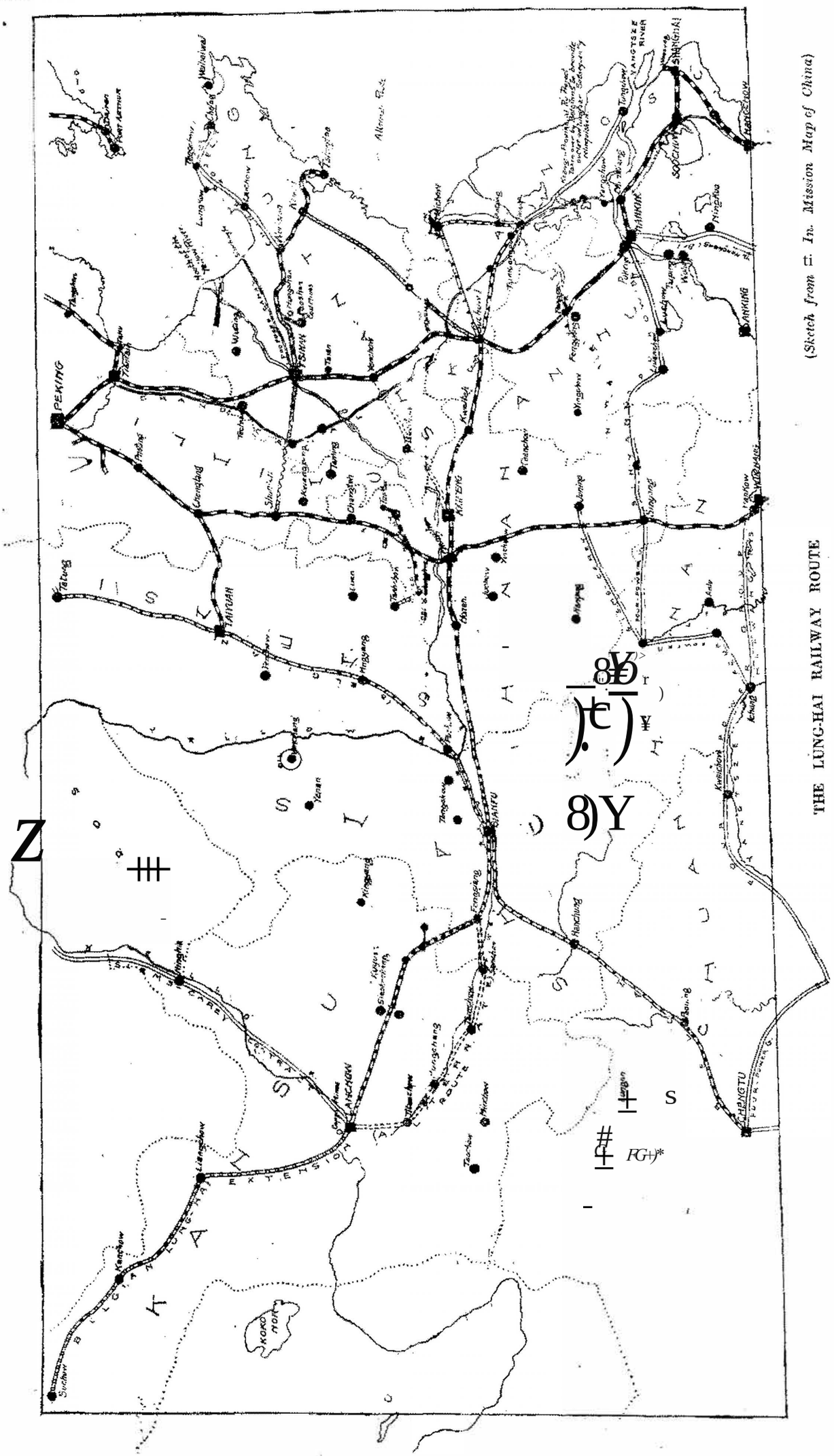
(!O) The port will be built by contract. The price of the contract mul:lt be ;mbmitted by the chief engineer to the gpnc.ral manager and approved by him as soon as possihle after the plans and speeifications arc finished. The S_yn dirate Ncc!'landaise 'will he admittc-d to the di cus-5ion of the contract.

(11) The orders for supplying the division weBt of Tsinpu ,will be the same a'ff the contract 1912, giving pr(iforence to Belgium and France, VVhen t,he factories of the> above countries are unable φG furnish, the preference, ,vill be givt::n to J)utC'h interests through the Syndic.ate Ne-erlandaist .

For the supplies of the division e "lt of Tsinpu antl to tho port, the General Com pany „vill rely upon the Syndicate .Nccrlandaiso wh0 will give the fi'Hit preference to Dutch indushies) after to French anrl Belgian_

The colonies 1vill be a.ssimilatf.d to their motherland, The factorief) in forei gn countries ,vith.I{clgian J French an,J Dutch management will have the preference over other foreigners.

(12) According to Article 13 of the contract of 1912, the Syndicate will put the net amount of the bonds at the rlisposition of the railway Lunghaj, and they will open a current account at Amsterdam named ·'(foyernmcnt Chino:is-Ohemin-de-lerdc Lung-Tsing-U-Hai." The raihvay can dm-w from this account according to their needs with the consent of the General Company and the Syndicate Neerlandaise.



(Sketch from tt In. Mission Map of China)

THE LUNG-HAI RAILWAY ROUTE

The total credit of this account will carry an interest of 3 per cent. per annum to the benefit of the Lunghai.

(13) In order to repay the interior loan the sum of $1,800,000 (Mex.) can be withdrawn from this account.

(14) An ample provision will remain in the hands of the General Company and the Syndicate Neerlandaise to assure the financing of the loan up to the first of July 1922, to cover the expenses of the survey of the port, to pay for material, and other expenses in Europe.

(15) The General Company and the Syndicate Neerlandaise respectively will issue immediately the first portion of the loan as per Article 3.

These bonds of a nominal value of fifty million francs, and sixteen million six hundred and sixty-seven thousand florins (Netherland) respectively, will be represented treasury bonds of the Chinese government carrying 8 per cent. interest yearly to be paid half-yearly, re-imbursable at par by one-fifth of the issue yearly, to begin from the sixth year and to terminate at the end of the tenth year. The anticipated re-imbursement can only take place in the case of a cancel of this agreement (see Art. 18).

(16) The General Company buy firm at 91 per cent. the fifty million nominal and the Syndicate Neerlandaise buy firm at the price of 91 per cent. the 16,667,000 florins (Netherland) nominal, as soon as the notifications foreseen by Article 19 has been made. The General Company and the Syndicate Neerlandaise will place at the disposal of Lunghai, a third of the amount respectively. The whole amount will be placed at the disposal of Lunghai within a period not longer than forty days after the notifications. However if the notification has not been made on the first of June 1920 at the latest, the General Company and Syndicate Neerlandaise will be exempt from any engagement to buy firm any of the bonds at 91 per cent.

(17) The Syndicate Neerlandaise will not be obliged to issue before the first of July 1922, the second third of the loan (see Article 3) neither before the first of July 1923, the last third. If at the expiration of these periods these issues have not taken place on account of the political or financial situations, the Chinese government and the General Company will grant to the Syndicate a reasonable period of prolongation.

(18) If this extension of time passes without the Syndicate Neerlandaise being unable to issue, this present agreement will be null and void as soon as the issues and advances made by the Syndicate will have been repaid with interest up to date.

(19) The Wai-Ciaopou will notify the ministers of Belgium, France and Holland in Peking, of this present agreement. Moreover the Wai-Ciaopu will notify the minister of Holland the agreement of 24th September, 1912 and its particulars.

(20) In case of disagreement on the subject of interpretation or application of this present agreement, the difference will be settled by a court of arbitration composed of two arbitrators, presided over by a referee. An arbitrator will be chosen by each of the two parties, viz.: The General Company and the Syndicate Neerlandaise for one part and the Chinese government for the other part. The referee will be chosen before the beginning of the contest by the two arbitrators.

Made in three copies at Brussels on the first day of May 1920.

For the Chinese Republic: The General Manager of the Railway for Lung-Tsing-U-Hai.

For the General Company of Railways and Tramways in China: Two Administrators.

For the Nederlandshe Maatschappi Voor Havenwerken: Power of Attorney.

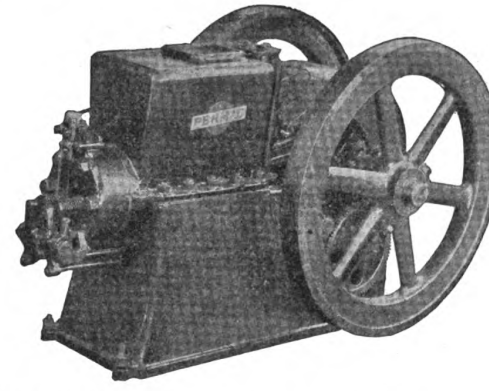
SHANGHAI EXPOSITION IDEA REVIVED.—Since his return from the United States, Mr. Y. T. Nieh, Chairman of the General Chamber of Commerce of Shanghai, has revived the idea of holding an international exposition at Shanghai. Conferences are proceeding, but no definite plans have been made.

Simplicity in Oil Engines

BELOW is shown an illustration of the Permac oil engine, one of the latest and most interesting American engines that have appeared on the market in recent years.

The Permac is a small oil engine designed chiefly for agricultural and small industrial power purposes. At the present time, it is made in 3 H.P., 6 H.P. and 8 H.P. sizes, but larger and smaller models will be added from time to time.

The most striking feature of the Permac is that it starts and operates on its own compression, and on the same fuel (kerosene, distillate, fuel oil), and has no ignition devices of any kind (no carburetor, no magneto, no battery, no wiring, no spark plug, etc.) Therein lies its greatest advantage over the gasoline engine. It has long been recognized that 80 per cent. of all engine troubles are due to faulty ignition, and that this has proved to be the greatest obstacle to the widespread use of gasoline engines. By eliminating all these ignition devices, the Permac will go a long way towards satisfying those who demand a prime mover whose cardinal feature is simplicity.



Another feature of the Permac, and equally as important, is its ability to operate on paraffin (kerosene) distillate, fuel oils or any of the low-grade oils. It does not operate on petrol (gasoline). The ever increasing price of gasoline and the great difficulty which many countries have experienced in procuring this product, have greatly added to the operating cost of gasoline engines. On the other hand, crude oil is found abundantly in many parts of the world, and there is no doubt that the Permac will be able to reach out into many fields where the gasoline engine is practically barred.

Operation.—The Permac is a high-compression four-stroke cycle engine and ignition of the fuel is automatically caused by the heat generated by the compression of the air in the cylinder.

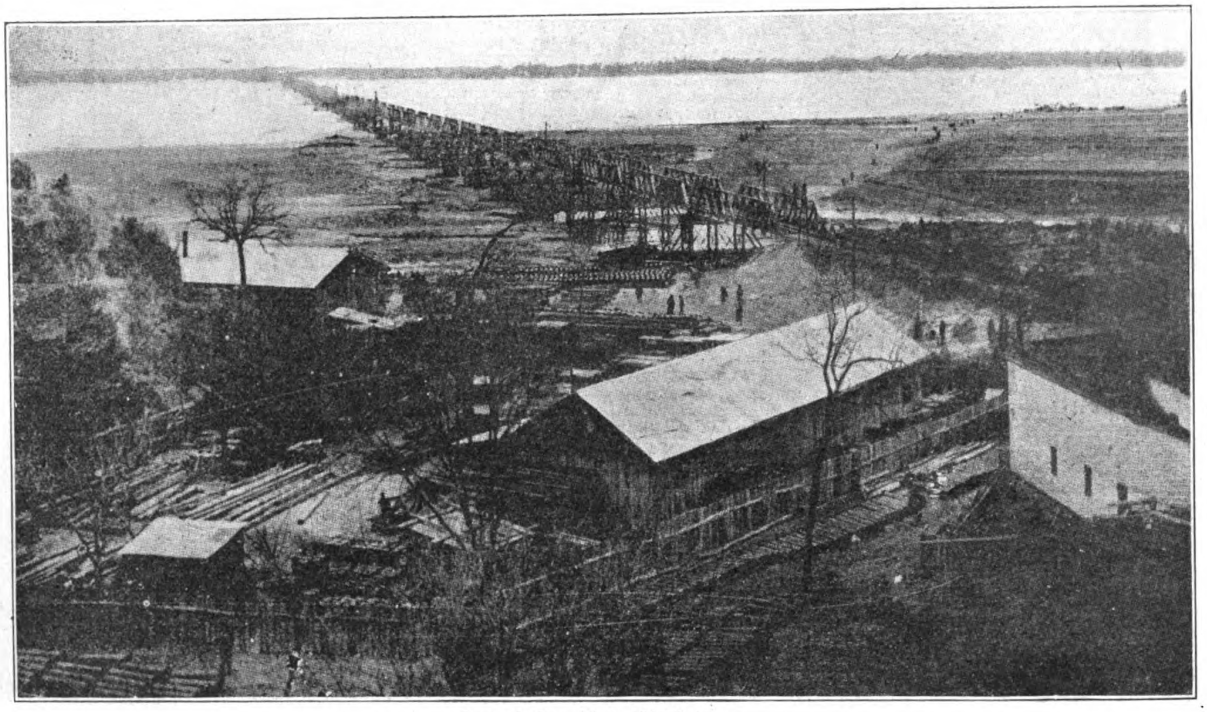
The fuel injector is set into the cylinder head and has on the lower end a cup which projects down into the combustion space and which has in it some small holes pointing toward the piston.

On the suction stroke the fuel feeds by gravity past the needle valve, controlled by the governor, and the fuel valve into the cup.

On the compression stroke the air in the cylinder is forced into the combustion space under a pressure of about 450-lbs. which gives a temperature of about 1000° F.; entering the cup through the small holes the hot air causes the fuel in the cup to "flash" and it blows out in a fine spray through the holes into the combustion space where it burns and forces the piston on the power stroke. The piston returns on the exhaust stroke and the cycle is complete. The speed and power of the engine are controlled by the amount of fuel fed past the needle valve.

Although the Permac has been on the market for a comparatively short time, it has already aroused considerable interest in many parts of the world, and many orders have been received from the Philippine Islands, New Zealand, India, Straits Settlements, Japan, Great Britain, Argentina, Peru and other countries.

The Yellow River Bridge



General View of the Old Bridge

THE Chinese ministry of communications invites sealed proposals from bridge constructors for designing and building a new steel bridge about 2,800 meters in length across the Yellow River (Hwang-Ho). Proposals will be received up to noon of June 30th, 1921, at the office of the Peking-Hankow Railway, Peking, China. Plans, rules, and specifications can be obtained from the following offices :—

PEKING : Peking-Hankow Railway, American, British, Belgian, French, Italian and Japanese Legations.

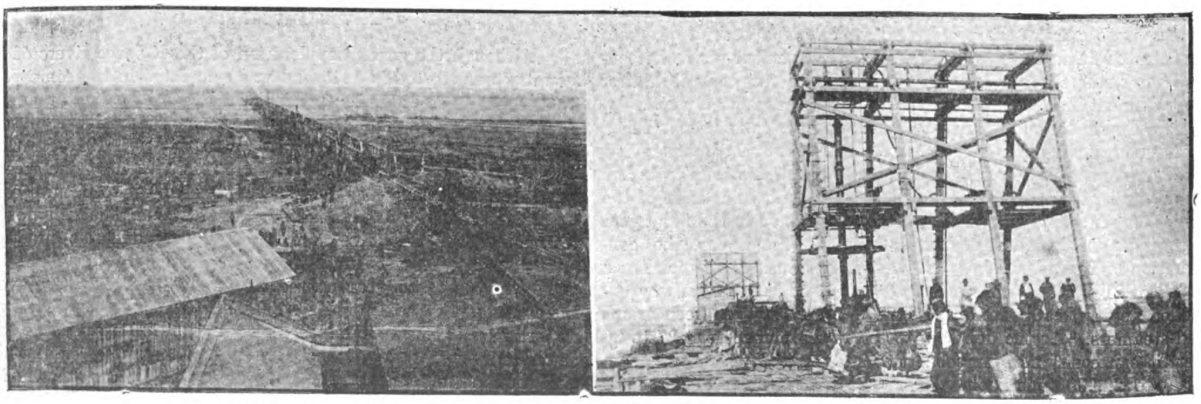
FOREIGN : Chinese Legations, Washington, London, Brussels, Paris, Rome and Tokyo.

All applications for same must be accompanied with £6.

PEKING-HANKOW RAILWAY ADMINISTRATION.

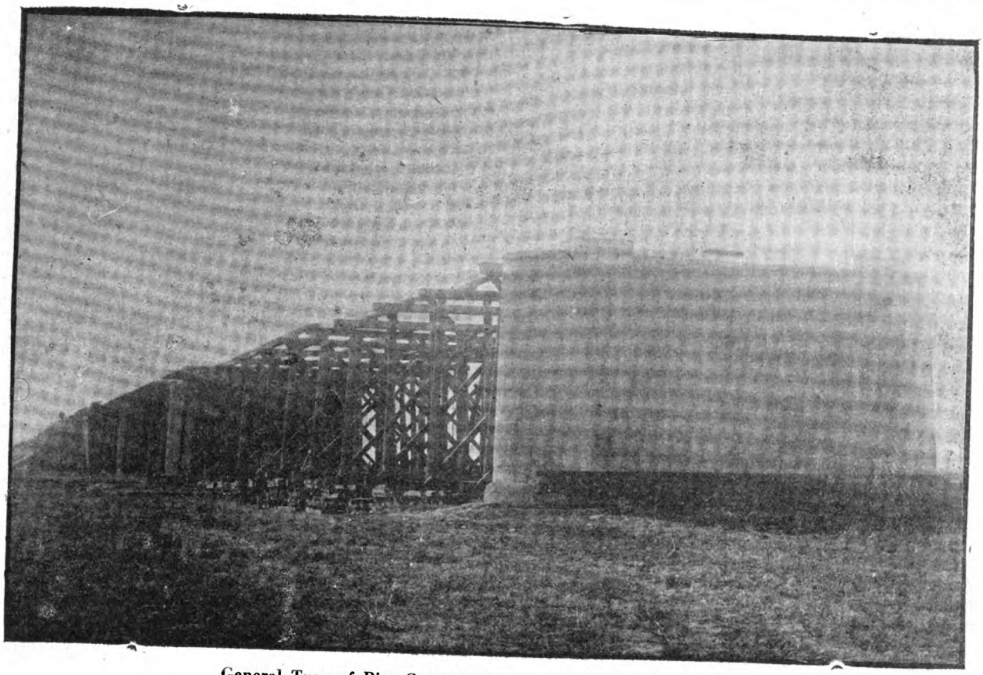
Information about the construction of the old bridge has been very limited. At the time of its completion the following information was given to THE FAR EASTERN REVIEW by the French engineer-in-chief in charge of its construction.

"This structure is 3,010 metres long. The construction of this bridge was a unique feat in engineering and one on which the eyes of the engineering world was earnestly fixed. It is about 6.25 meters above high-water level, and is of steel throughout, the massive girders being supported on sets of screw-driven tubular piles. The steel piles were screwed into the bed of the river by means of hand capstans manned by squads of coolies. In fact all bridges are of steel and like construction, while the approaches and other masonry work are of concrete. The bottom end of each pile has a tooth point with a large inclined blade



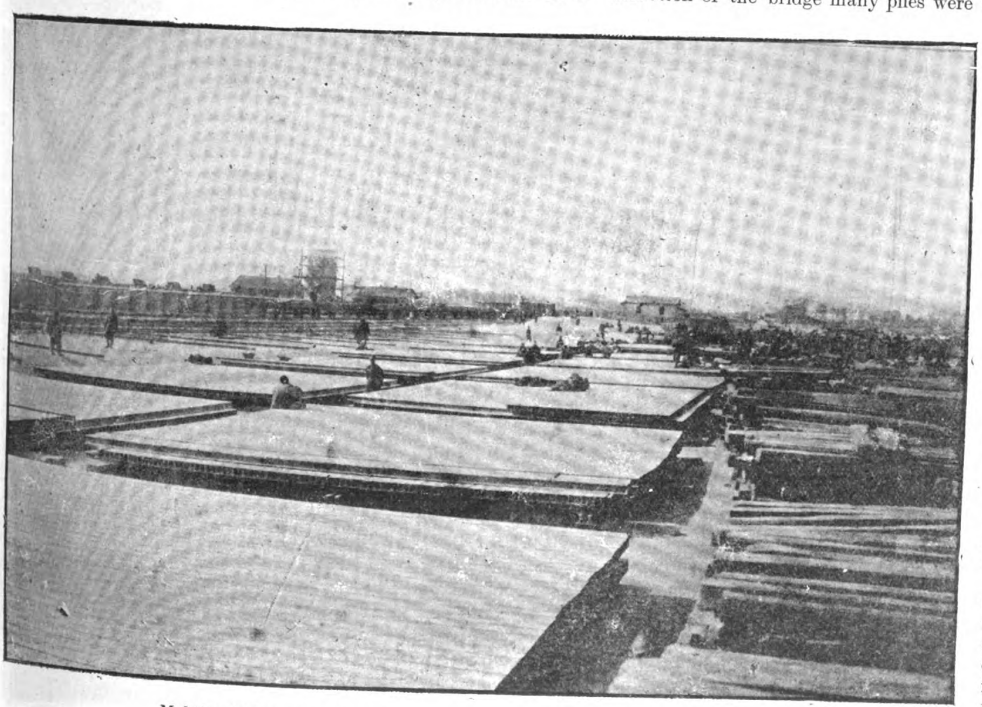
Girder Construction and Sinking Screw-Driven Piles for the Old Yellow River Bridge

above it, not unlike the tip of a corkscrew. To each point was clamped an enormous grooved pulley, around which was wound a wire hawser. One end was led to one of the capstans, and then the coolies heaved away and the work of screwing began. The rotary motion of the piles, with the corkscrew blade, naturally screwed the pile down into the mud till the pulley was level with the platform on which the workmen were standing. When the pulley reached this platform, another length of pile was bolted together, the pulley raised to the upper flanges, and the screwing resumed. When the piles had been screwed to a sufficient depth, say 12 to 15 meters, the water was pumped out from the interior. The pile was then filled with concrete. Wooden piles were then driven around the current side of the piers in the shape of a triangle, with the points to the current, as a protection to the structure. Huge beds of tree branches, lashed together with wire, were then sunk around the steel piers, and on these beds hundreds and hundreds of tons of rock were thrown. This was reckoned to give more solidity to the river bed where the piers were driven, and possibly prevent the river washing away the foundations, if such the shifting bed of the river can be called. The steel piles were placed in sets of four, six, eight and ten, and each pile is joined by stanchions and girders of great strength, and finally each set of piles is spanned by an enormous girder on which the rails are laid. Half of this bridge was built in France, the other half in Belgium.



General Type of Pier Construction, the Old Yellow River Bridge

"The river bed is one gigantic quicksand and during the construction of the bridge many piles were sucked under as well as platforms supporting machinery. Breakwaters of stone have been built along the banks of the river to prevent the undermining of the bridge foundations, and either end of the structure is protected with stone-faced dykes to prevent the water washing away the dykes."



Mobilized Millions of Tons of Material Utilized for Rail and Bridge Work

The governor of Honan in 1909 called attention to the state of this bridge. It seems that the stream is undermining the pillars supporting the bridge and the safety of the structure is threatened. Aside from this the bridge is said to be altering the current, so that serious trouble may be looked for.

In connection with the advertisement for the new bridge, the minister of communications has issued the following letter for public information:—

"The attention of

this ministry has been called to the publication of an article of the *Morning Post*, containing allegations about the overestimate of the Yellow River Bridge. As such allegations may tend to create misunderstandings, the following statement of facts about this subject is furnished for public information :—

"The Yellow River Bridge was completed in 1906, and it was only meant to be a temporary structure. With a view to prepare for its ultimate replacement by a permanent one, the director-general of the railway department in 1913 had started a sinking fund for this purpose. The decision was then made to set aside $1,000,000 each year out of the surplus of the Peking-Hankow line as special reserve, so that in time the accumulated sum would be sufficient for the construction of a new bridge. It was unfortunate, however, when Minister Yeh assumed office in last August, he found all the cash funds specially reserved for this purpose had been misappropriated, leaving only $2,000,000 in Peking notes, and $178,100 in cash, whereas there should have been $791,000 in cash, $2,250,000 in Peking notes, $1,635,000 in Seventh Year Domestic Bonds, and $483,000 from matured bonds.

"Finding the sinking fund so depleted, and realizing that time prevented the original plan of providing funds from being carried out, the minister decided, as the reconstruction of the bridge has become more and more imperative, to call for tenders for the work. This has been done, not only in China but also in foreign countries, throughout the world, and the various foreign ministers in Peking have been requested to give assistance in this regard. Already numerous applications for details have been made by leading foreign bridge constructors and their estimates and plans must be in the hands of the ministry by the end of June, 1921.

"Before tenders come in no-one at this time knows how much the bridge will cost. It can only be determined after the character of the bridge has been decided upon. Therefore the charge that this ministry has overstimated the cost of reconstructing the bridge by some $4,000,000, and the baseless declaration that $6,000,000 would be sufficient for this undertaking is absolutely false."

Some idea of the old bridge and methods of construction can be obtained from the accompanying views taken when it was building.

Wool and Wool Manufacture

A VERY interesting booklet upon Wool and Wool Manufacture written primarily for the layman has been issued by The First National Bank of Boston. It has been written by Mr. James Paul Warburg of the staff of The First National Bank and follows the wool industry from the raising of the sheep to the marketing of the finished products. The United States grows only about one-half of the wool consumed in this country and 70 per cent. of the wool imported comes into the United States through the Port of Boston. About one-half of this amount, or 35 per cent. of all the wool imported into the United States, is financed by The First National Bank of Boston, which it is evident speaks with authority concerning the industry. Part 1 of the booklet is devoted to the raw material and covers such subjects as sheep raising, shearing and marketing of fleece wools and general classification of wools. Part 2 covers the various processes of worsted manufacture. Part 3 covers woollen manufacture. Part 4 is devoted to the financial aspect of the wool industry. This section gives in brief the methods of financing from the raisers of sheep to the distributors of the manufactured products. The booklet is written with as little technicality as is possible and contains only such statistics as are necessary for the adequate understanding of the subject. It is generously supplied with illustrations. This booklet will be found of great interest to those who are engaged in any branch of the wool industry and to those indirectly connected therewith. A copy may be obtained by addressing the Commercial Service Department of The First National Bank of Boston.

Japan to Adopt Metric System

THE Department of Agriculture and Commerce has decided, according to the *Chuo*, to adopt the metric system of measurement, and for this purpose a special committee has been appointed to start preliminary investigations. Taking advantage of the government decision, architects throughout Japan have organized an association with a view to introducing the metric system in the construction of all Japanese houses whether for dwelling or any other purpose.

"In constructing Japanese buildings, considerable inconvenience is experienced because of the absence of unity in the system of measurement," says Dr. Sano, of the Tokyo Imperial University and a member of the above government committee, as quoted by the *Chuo*. "In order to improve the efficiency of architects, as well as in the interests of economy, it is highly advisable to unify the system of measurement. Investigations have thus been started with a view to introducing the metric system in Japan. The result will be made public in March next, when the new system will be adopted first by the association of architects. According to the government authorities, the new system will thoroughly replace the old Japanese measurement system within ten years."

Chinese Cotton Displaces American Cotton

(*Special Correspondence of "The Far Eastern Review"*)

New Orleans, La., November 15.—Chinese cotton growers are steadily becoming independent of the American staple, it is stated here, where there is considerable interest in the development of cotton mills in China. Here are some startling figures:

CHINA'S CONSUMPTION OF AMERICAN COTTON

1912	$3,175.504
1919	1,379,654

Cotton seed imported from the United States has produced a staple that competes successfully with the parent fibre.

"Keep the Cotton and Sell the Cloth"

(*Special Correspondence of "The Far Eastern Review"*)

Greenville, S.C., November 8.—Chinese competition in the growth and manufacture of cotton has drawn the attention of planters to the speech at Maplewood, N.H., of Daniel H. Douty, advising eastern cotton mill men to unite with growers in a movement "to keep the raw cotton, manufacture it and sell the cloth." Greenville recently enjoyed a visit from Mr. C, C. Nieh, president of the Chinese chambers of commerce and the most prominent Chinese cotton magnate. In a speech made at the Southern Textile Exposition, the Chinese visitor gave facts and figures showing that in a few years China has doubled the number of her spindles. In Tientsin, alone, ten mills were added within a year. In his address Mr. Nieh stated that in the past year the Chinese have purchased forty-five cotton mills in the United States and plan to purchase a great deal more. One of America's leading cotton experts is now in China, he said, to teach the people here to improve the growing of cotton. Over 2,500,000 spindles are now running and Mr. Nieh expects China soon to pass the 3,000,000 mark. Ten years ago there were only 900,000 spindles in China.

revenue during 1919 which would not have been the case if we had ordered them in England.

CONSTRUCTION STORES.—During the year stores and materials for railway construction were purchased to the value of $3,594,206.52, of which the amount paid through the Crown Agents was $2,956,287.40. Value of the stores in hand at the close of the year 1919 was $121,296.08. Indents to the number of 22 and estimated value of $3,171,566.09 were despatched to the Crown Agents.

CONSTRUCTION.—The total expenditure during the year 1919 on construction and surveys of new lines amounted to $7,655,202.28 as compared with $2,354,229.38 during 1918.

EAST COAST RAILWAY: KELANTAN SECTION.—This railway starts from Tumpat and proceeds southwards towards Kuala Lipis in Pahang. The length of this section from Tumpat to Pahang-Kelantan boundary is 108 miles, of which 32 miles from Tumpat to Tanah Merah were opened for traffic on 1st July, 1915. The work on this section, which was stopped in November, 1914, was recommenced in January, 1918, and the progress made is as follows:

The necessary land has been acquired up to 62½ mile. Jungle has been felled for 29 miles and cleared for 24 miles. Nine hundred and seventy-seven thousand six hundred and thirty-two cubic yards of earth work and 16,589 cubic yards of rock have been executed beyond Tanah Merah. The permanent way has been linked in for 3¼ miles.

The expenditure during the year amounted to $1,423,165.68.

EAST COAST RAILWAY, PASIR MAS TO RANTAU PANJANG EXTENSION (TO CONNECT WITH SIAMESE RAILWAY).—This railway starts from the south end of Pasir Mas Station on the East Coast Railway, Kelantan section, and runs in a north-westerly direction to the Golok River at Rantau Panjang on the Siamese boundary, a distance of 11¾ miles. Work was commenced in February, 1917, and the progress made is as follows:

The necessary land has been acquired. Jungle-felling and clearing has been completed. Out of an estimated total of 848,183 cubic yards of earthwork, 793,976 cubic yards have been executed. The masonry of 18 bridges is completed and of five in progress, and the steel work of one bridge is also in progress. The permanent way has been linked in for 11½ miles, lifted and packed for 11¼ miles. All the buildings on this line have been completed.

The expenditure during the year amounted to $520,205.61.

EAST COAST RAILWAY: PAHANG SECTION.—This railway starts from Tembeling and proceeds northwards towards Tumpat. The length of this section from Tembeling to the Pahang-Kelantan boundary is 70¾ miles and the progress made on construction is as follows:

Land has been acquired to the Pahang-Kelantan boundary. Jungle has been felled for 48½ miles and cleared for 40 miles. Out of a total of 9,446,949 cubic yards of earthwork, 5,628,894 cubic yards of earthwork and 616,070 cubic yards of rock have been executed. Out of 337 bridges and culverts provided, 116 are completed and 12 are in progress. The permanent way has been linked in for 32½ miles and lifted and packed for 25 miles.

The line from Tembeling to Kuala Lipis (117th to 141¾ miles from Gemas) was handed over to open lines and opened for traffic on 15th October, 1917.

The expenditure during the year amounted to $2,188,164.00.

PERLIS RAILWAY EXTENSION (TO CONNECT WITH SIAMESE RAILWAY).—This railway, which starts from Alor Star, the capital of Kedah, and runs through Perlis to Padang Besar on the Siamese frontier, over a length of 42 miles, was completed with the exception of eight bridges and was opened for traffic on 1st March, 1918. The steel tops for these eight bridges, which were not delivered from England owing to the war, are now being received and the temporary trestle bridges being pulled down and replaced by steel tops. Certain buildings were also erected during the year at Padang Besar on joint station account.

The expenditure during the year amounted to $65,869.06, but a credit to the amount of $138,387.48 was received from the Siamese Government on account of their half share of works done by this department at the joint station.

PRAI DOUBLING, WHARVES, ALTERATIONS AND ADDITIONS, AND PURCHASE OF LAND.—The doubling of the line from Prai to Bukit Mertajam, a distance of 6 miles and 42 chains, together with sidings and buildings, were completed and handed over to open lines on the 24th May, 1918.

Out of an estimated total of 551,342 cubic yards of earthwork, 467,163 cubic yards have been executed.

CAUSEWAY ACROSS JOHORE STRAITS.—The contract for the construction of the causeway crossing the Straits of Johore between Johore Bahru and Woodlands was let to Messrs. Topham, Jones and Railton, Limited, in June, 1919, the time allowed for the completion of all the works being 5¼ years. Up to the end of the year the work was almost entirely of a temporary character and considerable progress had been made in the preparation of plant, and the erection of shops, offices, staff quarters and cooly lines, etc. Ten hopper barges for the conveyance of stone from the quarry to the causeway were ordered in England. Four have been delivered and are under erection at Singapore, but had been delayed on account of shipping difficulties and labour troubles and were not completed at the end of the year. One large steam tug has arrived from England and another is on order, while a smaller tug and a steam launch were bought locally. The opening up of the quarry at Pulau Ubin has proceeded very satisfactorily and it is now in a position to begin the supply of both rubble and crushed stone for the works. Permanent work has been begun on the construction of the lock at Johore, and is proceeding satisfactorily. The expenditure during the year amounted to $747,208.91.

Railway Facilities at Harbin

WRITING from Harbin in September, U. S. Trade Commissioner Batchelder says that ample freight and passenger services connect Harbin directly with Mukden, Dairen, and Tientsin through the South Manchurian and Peking-Mukden railroads, and with Yokohama, through the railroad systems of Korea and Japan. Sleeping cars and dining cars are attached to many of the trains. Regular daily trains with sleepers run between Harbin and Vladivostok.

The freight equipment is also adequate to handle an addition of 50 per cent. to the existing traffic, and there are 9 unused American locomotives, besides many idle freight and passenger cars. About 150 of the latter are being used as living quarters, the majority having come from the Russian railroads. The improvement in conditions is largely due to the efforts of the Allied Technical Board, under the presidency of Mr. J. F. Stevens. It has spared no pains to secure freight from shippers of beans and other commodities, and has in some cases moved freight cars 1,000 miles in five days.

The result of these methods, when applied to railroads free from military control, is shown by the following table of cars loaded and moved during the months mentioned: January, 180; February, 232; March, 262; April, 254; May, 340; June, 455; July, 482.

If the traffic were to increase materially, there are numbers of cars and locomotives which could be repaired for service.

Since 1918, however, there has been but little regular freight traffic over the Trans-Siberian Railway, and for some time through traffic has ceased owing to military operations. It is alleged that regular trains are running from Irkutsk to Moscow.

Since the difficulties of the Chinese Eastern Railroad have been remedied, the impediments to trade are merely political, though if transportation were to begin to the interior of Siberia, the Chinese Eastern Railroad would need new equipment of many kinds—ties, rails, and many other items of maintenance. It is probable that the requirements of the other portions of the Trans-Siberian system would be even greater.

It is interesting to note that the train service is being carried on exclusively by Russians, and that they have profited by the training given them by the American railway engineers.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

Baldwin Locos for China.—Ten Baldwin locomotives have been shipped for the Peking-Suiyuan Railway, China, also ten Baldwin locomotives to Peking-Mukden Railway, China. Twelve Baldwin locomotives for the Canton-Hankow Line, Hunan-Hupei Section, have recently arrived at Hankow.

Enlargement of Railroad Station, Osaka, Japan.—The Umeda main railroad station of Osaka will be enlarged in the near future. A large locomotive round house is already under construction.

Bridge Construction Car, Japan.—The Hamatsu Works of the Imperial Government Railways, has recently built a bridge construction car, with a length of 70 feet, 7 feet in width, with 16 wheels bogie trucks.

Saiki-Kanbara Railway, Japan.—The construction of the government railway between Saiki and Kanbara, Kyushu, a distance of 9.8 miles, has just been completed, and the railway is open for business. The chief products of the districts are—railroad ties and general lumber.

Lhasa-Indian Line Project.—The visit of Mr. C. A. Bell, political officer, to the Dalai Lama has revived hopes of the construction of a railway line from Lhasa to India, along the banks of the Amuchu and Tursa rivers.

Railway Sleeper Tests, Japan.—The Japanese Railway Department has been testing timber, iron, and concrete sleepers, since 1913, and finds that the (larch?) sleeper is good for six or seven years. This has determined the department to go into the forestry business on its own account. The tests of steel and concrete ties are still going on. It is estimated that the government railways of Japan use about 3,500,000 sleepers annually, at a cost of Yen 4,550,000.

Rolling Stock Bonds.—Chinese bankers suggest that the ministry of communications issue bonds to the amount of $6,000,000 silver, for purchasing cars to make up the present shortage on different lines. The Banks of China and Communications recognize this as an industrial loan, but claim the right of supervision over the expenditure. The loan is now under negotiation.

New Private Railway, Japan.—The Nota Tramway Company, Ltd., of which Mr. Tsuda Chusuke is chairman, has received permission to construct and operate a tramway line 61 miles in length, connecting Hagui-machi with Wajima-machi in Ishikawa Prefecture. Its cost is estimated at Yen 6,500,000.

Kobe-Osaka Four Track Line.—Part of the line between Nada and Ashiya has been completed at a cost of Yen 1,500,000. Work is being pushed ahead on the balance of the line, estimated to cost Yen 6,500,000.

West Korean Railway Company, Ltd.—The line between Sarien and Sainei, 14 miles in length, was completed in December, it will connect with the main S.M.R. Line. A locomotive and car house will be erected at Sainei.

Actual Earthwork Costs in China.—The Kin-Han Railway Administration proposes to construct the west section of Chang-Si line from Si-Chia-Chuan to Wu-Chiang-Hsien, a length of about 200 *li*, in order to provide employment to the famine sufferers. The usual contracting methods are to be abolished doing away with the profit paid to contractors and earth work done by the laborers will be paid for as follows :—

Height of embaakment.	Cents per 100 cu. ft.
Under 5 ft. (Chinese measure)	...c18 silver .09 gold
Between 5 and 10 ft ...	...c20 ,, .10 ,,
Above 10 ft.	...c22 ,, .11 ,,

The Hukwang Railway.—In order to utilize the famine labor in North China, the director of the Szechuan-Canton-Hankow Railway has decided to renew the work of building certain sections of the line by employing the famine sufferers. At a railway conference held in Peking some time ago, a resolution was passed authorizing the authorities of the Szechuan-Canton-Hankow Line to raise a loan for the work and, accordingly negotiations were entered into with certain American syndicates for the loan. It is understood that everything concerning the stipulation of the loan has been definitely settled between the American financiers and the authorities of the Szechuan-Canton-Hankow Line (?) The contract for the loan is to be signed after Mr. Yen, the director of the Szechuan-Canton-Hankow Railway, arrives in America to make further arrangements with the American financiers interested in the deal.—Chinese Press Report.

Railways in the Celebes.—On July 19 the first ground was broken for the Takalar-Macassar-Maros railway. destined to extend through such districts as are rising economically or are likely to prosper in the future.

The extended line will run from Maros by way of Pangkadjene-Segiri-Tanette, Mariori and Soppeng to Singkang a distance of 150 K. M.; and the costs are estimated at 10 million guilders approximately.

Meanwhile, although the State Railway Service is dreaming of laying down railways all over the south-west, the Takalar-Macassar-Maros line is the only one that will be constructed at present. The length of the line will be about 72 K. M., the costs being estimated at a round 3 million guilders. The line passes through fertile and densely populated plains of Goa and Maros, that hold respectively 160,000 and 70,000 inhabitants, not counting the people living beyond the ricefield area. The Goa plain covers about 45,000 *bahoes*, the Maros plain about 12,000 *bahoes*. They yield a considerable quantity of good rice of which, a monthly average of 400 piculs is shipped at Macassar, the want of the population having been supplied in the first instance.

The estimate of the profits and expenses of the Takalar-Macassar-Maros line shows a favorable balance.

The proceeds from the passenger traffic are estimated at a round f.180,000; from the goods traffic at f.75,000; and from other sources at about f.16,000. The managing expenses will amount to about f.130,000 a year, leaving a favorable balance of f.1,000,000 yearly.

German Railway Material for Java!—Respecting the order of the Netherlands government for thirty-seven railway engines for Java from Krupps, which was contradicted in the Dutch papers, the *Netherland Indies Review* is informed by an irrefutable authority that Krupps have actually received this order, and that their tender which was approximately fl. 12,000,000, was lower than those of British and American competitors, which were in the neighborhood of fl. 20,000,000. Furthermore, the Essen firm is straining every endeavor to ensure that they shall not be "entrusted with the supply of engines" alone, but, that orders for wagons, rails and other equipment required for railway expansion in the Netherlands East Indies shall be passed to them in due course.

Ching-Meng Railway.—The *Sinwanpao* reports that the Ching Meng branch line of the Taoching Railway in Honan is now being surveyed and the land needed is being bought up.

New Construction, Manchuria.—The construction of the following railways in Manchuria is contemplated :—

	Miles.
Kirin-Hweining Line	... 160
Kirin-Kaiyuan *viâ* Hailungcheng ...	... 170
Szupingkai-Taonanfu Line	... 100
Chinchow-Aigun Line	... 700
Changchun-Taonanfu Line	... 150
Taonanfu-Jehol Line	... 370
From a point on the Taonanfu-Jehol Line to the sea	... 150

Chefoo-Weihsien Grading (?).—The ministry of communications states that grading of the Yen-Wei Line from Chefoo to Wei-Hsien, a distance of about 200 miles, is now in progress, under the direction of Mr. Chao, former district engineer of the Tientsin-Pukow Railway.

Tsang-Shih Line.—The construction of the Tsang-Shih Line from Shih-Kia-Chong to Tsang-Chow, has been started and grading is now in progress. This line is approximately 210 kilometers in length and will be constructed jointly by the Peking-Hankow and the Tientsin-Pukow Railways.

Canton-Hankow Survey.—On account of the unsettled political conditions in the Province of Hunan and also by reason of insufficient funds, the survey of the Canton-Hankow Railway from Chuchow to the Kwangtung Boundary has been suspended for some time past, but by order of the minister of communications and the director-general of the Han-Yueh-Chuen Railways, negotiations have recently been undertaken with a view to resuming the surveys of this line. Arrangements have been made for Mr C. J. Carroll in addition to his duties as engineer-in-chief of the Han-I and I-Kwei Sections, Szechuan-Hankow Railway,

to take charge of the survey party which will very shortly resume the survey of this line.

TRAMWAYS

Peking Tramways.—As a preliminary step towards the building of tramways in the Chinese capital, the Peking Municipal Bureau has appointed a party of experts to survey the principal streets in the city, beginning with the sections of the street at Tungshihpailou and Hsishihpailou, where the authorities plan to build two main lines.

Canton Tramways.—Work is to begin soon on the construction of the Canton Tramway. The $3,500,000 capital desired has been almost fully subscribed and some $600,000 worth of materials for the proposed street railway are said to have been ordered.

Electric Tramway, Kyoto.—The Kansai Electric Tramway Company, Ltd. was organized recently with a capital of Yen 10,000,000 for the operation of tram cars between Kyoto and Nara. The application has been presented to Kyoto prefectural office.

Electric Tramway Extension, Japan.—The Okayama Electric Tramway Company, Ltd. has been granted permission to construct and operate a line between Yumino-machi and Taiunji-machi in Okayama city.

New Electric Tramway, Tokyo.—The Todai Electric Tramway Company, Ltd., was organized recently by Mr. Torahiko and others, with a capital of Yen 8,500,000, to operate an electric line from Kanda-ku in Tokyo to Omiya-machi in Saitama prefecture, current to be supplied from a steam power plant. Permission, it is reported, will be granted subject to certain conditions, among which is one to connect with and form part of the new underground system, and when permission is granted, that work must commence within three years.

Okazaki Electric Tramway Company recently applied for permission to extend its line from Asuke, in Nagoya prefecture, to Sida in Nagano prefecture. The line passes through heavy country, and the estimated cost per mile is Y.100,000. The company will increase its capital when their application is granted.

Keihin Tramway Extension, Japan.—The Keihin Electric Tramway Company has applied for permission to extend its line from Tsurumi along the shore for a distance of five miles. This will assist in developing the shore lands now being reclaimed as sites for factories.

ELECTRIC LIGHTING, POWER, ETC.

German Dynamos for Nantungchow, China's "Model City."—Notwithstanding his recent visit to the United States and many after-dinner orations on Chinese-American business co-operation, Mr. Chang Chien has decided to order German dynamos and a complete German light and power plant for China's "model city," Nantungchow. After a conference with his elder brother, Mr. T. A. Chang, Mr. Chang Chien has placed a German engineer in charge of the electrification plans. Bonds are to be issued locally to cover the cost of installation and preliminary operation. The German machinery is expected to arrive in May. This announcement comes in curious confirmation of predictions made by the publisher of THE FAR EASTERN REVIEW. Antagonism to Japan does not deliver the American electrical business either in China or in Japan. In business, it always pays to keep out of politics.

China and Electrical Material.—Although there are considerable opportunities for British electrical firms to secure business in China, new electric plant being installed in many of the larger cities, caution (says a correspondent in *The Times Trade Supplement*) should be observed. This is emphasized by the fact that in connection with an electric light plant recently installed by a Japanese firm in a certain city in the Republic, so many natives have installed small petrol or oil-driven units and are selling light to those of their neighbors who can be included on the circuits, that the financial success of this municipal plant is doubtful. Chinese laws provide that all agreements or contracts entered into with regard to mines, railways, or other public property made between provincial authorities or private Chinese persons are invalid unless they have previously received the sanction of the Chinese government in Peking. So many serious misunderstandings have recently arisen on this subject that British firms interested in electrical or other undertakings should familiarise themselves with all conditions before they enter into any definite contract with municipal or other bodies.

Teikoku Electric Light Company, Ltd.—At its annual meeting held in Tokyo on November 3 this company voted to amalgamate with the Gaibo Electric Company, Ltd. (capital Yen 300,000) and the Toyok Kuni Electric Company, Ltd. (capital Yen 500,000). The plan is to reorganize with a capital of Yen 18,725,800, in which the Teikoku will hold 368,000 shares (par value 50, and 45 paid up) the Gaibo will hold 4,016 shares (par value 50, all paid up) and the Toyokuni 2,500 shares (50, all paid up.)

Katsuragawa Hydro Electric Company, Ltd.—Has received permission for the development of the Akano river, which will increase its power rights another 50,000 horse-power.

Want More Electric Light.—The Chapei (Shanghai) Chinese tax-payers have petitioned for extension of the electric light works, which are under the provincial control and have long been unable to supply sufficient current. The *Sin Wan Pao* says a reserve fund amounting to several tens of thousands of dollars has been built up. Why this money is not used in effecting the much needed improvement or extension, which would be both a legitimate and profitable investment, is a mystery to all outsiders. A joint petition submitted by the public bodies of Chapei to the governor at Nanking, asking for authority to use this reserve fund, has brought forth no response. Mr. Tsiang, manager of these works, is said to have tendered his resignation, as his suggestion for improvement was ignored by the governor.

Japan to Adopt New Wire Standard.—According to recent advices from Japan, ten of the principal electric wire manufacturers have issued a joint statement advising that they have completed preparations for the production of insulated electric wires and cords to meet the official standards published in October last. The manufacture of the old-type wires and cords which have until this time been used in Japan will be discontinued, it is stated.

Electrical Machinery Needed.—The Bukit Asam government colliery in Java badly needs an electric central and other machinery. These will be bought in 1921 at a cost of about two million guilders.

Electrical Supply for Pootung.—The Pootung Electric Supply Co. has finished testing its plant and has commenced the supply of current for lighting. The capacity is 300 k.w., which will be doubled as soon as the duplicate set arrives in Shanghai next month. The plant has been erected under the guidance of Mr. S. H. Dong, general manager and engineer-in-chief.

Loans to Electrical Enterprises, Korea.—The Bank of Chosen recently advanced Yen 40,000 to the Taikyu, Taiden, Gensen and Kaishu electric light and power companies, to enable them to carry out their extensions.

Gobishi Electric Machine Co., Ltd.—Organized with capital of Yen 1,000,000, quarter paid-up, for the manufacture of electric machinery. Office: 24 Minami-Konya-cho, Kyobashi-ku, Tokyo. Managing Director, K. Hirayama.

The Gumma Electric Company, Ltd.—This concern has about half completed the power plant and tunnel under erection at Kanaimura, Gumma prefecture. The transmission lines are now being erected.

Large Municipal Electric Power Scheme, Japan.—The Hyogo Prefectural Assembly has before its consideration a scheme to construct several hydro-electric plants to be operated under the management of the prefectural authorities and financed by prefectural loans, aggregating Yen 3,600,000. The scheme provides for the construction of nine power plants using the waters of the Sho and Chigusa rivers. The location and capacity of these plants are as follows; Fukuchi plant, 366 Kilowatts; Nishifuka plant. 464 kw.; Roga plant, 531 kw.; Himidani plant, 582 kw.; Ariga plant, 372 kw.; Nojiri plant, 615 kw.; Chiguya plant, 566 kw.; Kawasaki plant, 603 kw.; Usushino plant, 406 kw.; total, 4,505 kw. Construction is expected to commence in 1921. The plan provides for the completion of three plants every two years until 1926.

TELEPHONES, TELEGRAPHS, CABLES, WIRELESS

New Central Telephone Station, Tokyo.—The department of communications has decided to construct the new Tokyo central exchange in Marunouchi, at a cost of Yen 3,600,000. The new building will cover 4,000 *tsubo*. It will be five stories in height and built of steel and concrete. It will be completed by 1924.

Powerful Wireless Station, Japan.—Plans for a Y.200,000 wireless receiving station to be located in the Kwansai district of Japan have been submitted to the Diet. The station will be among the most powerful receiving stations in the world.

Wireless Telegraphy, China.—Nearly two years ago the Chinese government entered into a contract with the Marconi Wireless Telegraph Co., of London, for the erection of three powerful wireless stations, which would constitute the longest stretch in the world of wireless communication. The original plan provided for stations at Lanchowfu, Urumchi and Kashgar, but this has been changed owing to the different conditions brought about by the cancellation of independence by Mongolia and the return of the former dependency to the fold of Peking. Urga has been selected as the location of the first station in preference to Lanchowfu, and the work there has already commenced, the apparatus and material having been stored in

The Official Status of the Shantung Question

Statement Issued by the Japanese Ministry of Foreign Affairs, Tokyo, June 15, 1920

WHEN the Treaty of Peace with Germany became effective in January, 1920, and the German rights and interests in Shantung passed into the possession of Japan by virtue of the provisions of that treaty, the Japanese government, with the intention, in pursuance of their repeated declarations and pledges, of effecting the restoration of Kiaochau to China, and to make the necessary incidental arrangements, instructed the Japanese minister in Peking to inform the Chinese government :

(1) that the Japanese government desired to open negotiations with the Chinese government with regard to the restoration of Kiaochau to China and the settlement of the various details arising in connection with the matter, in order to arrive in this manner at a speedy solution of the entire question, and that they hoped the Chinese government would make the necessary preparations for that purpose ;

(2) that as regards the Japanese troops stationed along the Shantung Railway, not only was it the intention of the Japanese government to withdraw them, as a matter of course, upon an agreement being arrived at between the two governments as to the restoration of Kiaochau, but they were also prepared to effect the withdrawal as speedily as possible even before any such agreement was entered into ;—that, in the absence of any force, however, to assume the duty of protecting the railway after evacuation, they were constrained to keep those troops stationed there for the time being in order to insure the security of communications and to safeguard the interests of Japan, and of China who is equally interested in the railway as a co-partner in the joint enterprise ;—that they accordingly hoped that the Chinese government, appreciating the intentions of the Japanese government in this matter, would, with despatch, organize a police force to take the place of the Japanese troops in guarding the railway, in order that these Japanese troops might be withdrawn even before an agreement was reached on the main question of Shantung.

The foregoing was officially published on January 24 of this year, and the Japanese government made preparations to begin negotiations at any time, but three months passed without their receiving any reply from the Chinese government.

The old mud-walled Chinese fishing village of Tsingtau, which the Germans and Japanese developed into the present magnificent modern metropolis port and summer resort

It is a source of the deepest regret to the Japanese government that, at a time when all the nations of the world are putting forward their best efforts for the establishment of an enduring peace, questions such as this should remain unsettled between Japan and China. The Japanese government have been informed that the Japanese charge d'affaires in Berlin has received from the German government the various documents specified in Art. 158 of the Peace Treaty. Consequently the Japanese government, being all the more desirous of arriving at a speedy settlement of the matter for the mutual benefit of the two nations, again on April 26

instructed the Japanese minister in Peking to request the Chinese government to take forthwith the necessary steps, of which the adoption was urged in their previous communication.

It was not until May 22 that the Chinese government sent a reply in the following sense :—

"The Chinese government have noted that it is the intention of the Japanese government, now that the Treaty of Peace has come into force, to restore Kiaochau to China and to prepare for the withdrawal of the troops from along the Kiaochau-Tsinanfu Railway. China, however, has not signed the Treaty of Peace with Germany, and is not therefore in a position to negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. Furthermore, as the Japanese minister at Peking is very well aware, the whole people of China have assumed a strongly antagonistic attitude in regard to the question in hand. For these two reasons, and because of the importance they attach to amity between Japan and China, the Chinese government naturally felt it inconvenient to make a reply at the time. On the other hand, the Japanese military establishments within and without the leased territory of Kiaochau have been rendered unnecessary, and as it is the hearty desire of the people and government of China to have the conditions along the Shantung Railway restored to the pre-war footing, the Chinese government proposes to form at an early date a proper organization to take the place of the Japanese troops in guarding the whole line. However, this proposition has nothing to do with the settlement of the question of Kiaochau and the Chinese government trust that the Japanese government will not delay the withdrawal of the troops on account of that question."

Upon receipt of this reply, the Japanese government addressed the following note to the Chinese government, urging reconsideration of the position taken by them : —

"In their memorandum, the Chinese government state that, attaching as they do great importance to amity between Japan and China, they do not find themselves in a position promptly to meet the request of the Japanese government for opening direct negotiations on the Shantung question for the reason that they have not signed the treaty with Germany and because of the strong attitude of antagonism on the part of the whole Chinese people on this question.

"In view of the existence of a formal agreement between the two governments as to the fundamental principle governing the settlement of the question under discussion, and in view, further, of the fact that the repeated declarations of the Japanese government leave no room for doubt as to the singleness of purpose with which Japan seeks a fair and just settlement of the question at the earliest possible date, the Japanese government fail to see the force of the argument advanced in the Chinese memorandum.

"It is a positive fact that all the rights and interests which Germany formerly possessed in Shantung by virtue of a treaty with China have been transferred to Japan in accordance with the Treaty of Peace. The Chinese government having, in the above-mentioned formal agreement with Japan, pledged themselves beforehand to acknowledge and consent to this transfer, these rights and interests have of right come into the possession of Japan, irrespective of whether or not the Chinese government have signed the Peace Treaty with Germany.

"Immediately upon the coming into force of the Treaty of Peace, therefore, the Japanese government, in accordance with their repeated declarations and with agreements entered into, proposed to the Chinese government to open negotiations with a view to restore to China such of the rights and interests in Shantung as were to be restored, and to confirm in this connection such matters as required confirmation. The Japanese government were confident at the time that the Chinese government would respond readily to the proposal, and that they would not hesitate to open the path for the Japanese government to demonstrate in a concrete way their attitude of fairness and justice towards China. Contrary to these expectations, however, the Chinese government, after a delay of several months, have returned a reply that they do not find it advisable to open negotiations, giving as their reason the abstention of China from signing the Treaty of Peace and the antagonism of the Chinese people.

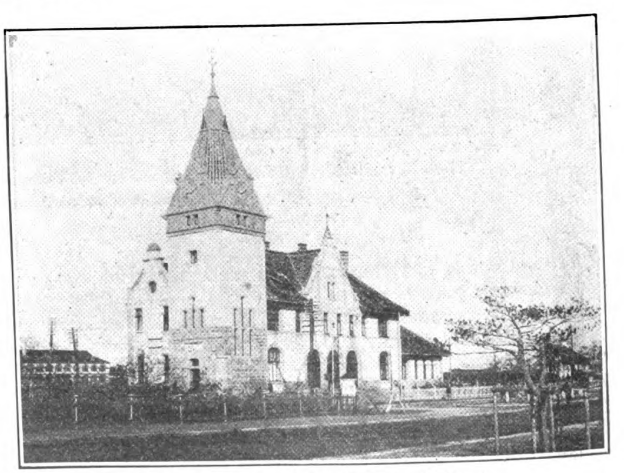
"This attitude on the part of the Chinese government prevents the Japanese government from realizing their sincere desire to carry out, with the utmost good faith, their treaty obligations, and to fulfill their expressed pledges. It need hardly be pointed out with whom rests the responsibility for delaying the settlement of the questions arising with regard to Shantung. The Japanese government, however, holding in high regard, as they have always done, amity and good neighborhood with China, hereby repeat the declaration that they are ready to negotiate on this question at any time the Chinese government may deem convenient. The Japanese government do not believe it to be the desire of the Chinese government to be held responsible for the delay in the eyes of the world, and it is in this belief that they sincerely urge the Chinese government to reconsider the matter.

"As to the railway guard in Shantung, it is the intention of the Japanese government, as stated in their note of January 19, 1920, to withdraw the Japanese troops, even before the conclusion of negotiations regarding Shantung, as soon as a Chinese police force is organized to guard the railway.

"The Japanese government, feeling confident that the Shantung railway police guard will be organized in accordance with the promise of the Chinese government and the understanding reached between Japan and the Powers at the Paris Conference, are prepared to withdraw the troops as soon as such police organization shall have been completed by the Chinese government and the Chinese and Japanese officials concerned shall have settled the procedure of transferring the duty of guarding the railway.

"Reference has been made in the Chinese memorandum to the military establishment in and around the Leased Territory of Kiaochau. It is with the desire to settle definitely, *inter alia*, the disposition of these establishments that the Japanese government seek to commence negotiations with China. It need hardly be pointed out that the question of this nature, constituting as it does only one item out of many questions calling for discussion and settlement, would naturally find its solution when the Chinese government proceed to negotiate, and a settlement of the Shantung question as a whole is reached."

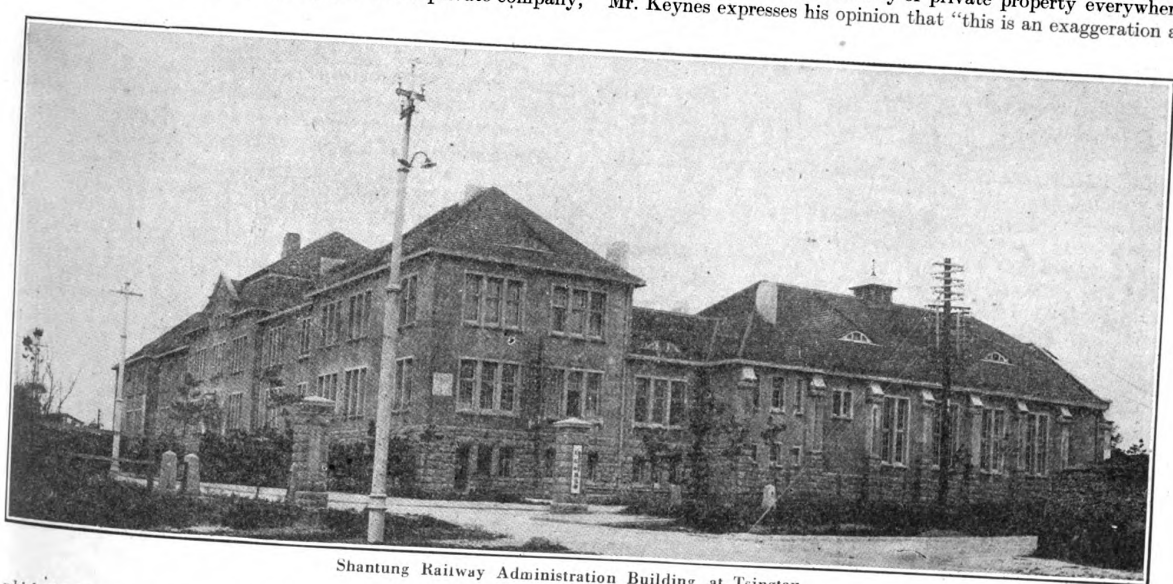
While it is a source of the deepest regret to the Japanese government that the existing understandings concerning the subject under review cannot at once be carried out, they remain none the less unchanged in their sincere desire to effect a fair and amicable settlement of this question with the least possible delay, and are prepared to make further efforts towards the realization of that fixed policy.



Tsingtau Station of the Shantung Railway

The Status and Future of the Shantung Railway

WHEN the Japanese military authorities took over the properties of the Shantung Railway in 1914, the act seemed to be in violation of the established principle of international law covering the inviolability of private property. In an article entitled "The Status of the Shantung Railway" printed in the November, 1914, number of THE FAR EASTERN REVIEW, it was contended that the shareholders or owners were entitled to a reasonable price for its confiscation and an indemnity for the use of the line during the time they were forcibly withheld from legitimate enjoyment of the property. The value was worked out at about £5,000,000, which was held at that time to be an adequate compensation of the private owners of the railway and mines. This opinion was based upon the fact that, although the concession for the railway had been extracted from China by the imperial German government, the charter for its construction and operation had been granted to a private company,



Shantung Railway Administration Building at Tsingtau

in which the German government held no pecuniary interest, other than a reasonable tax which took the form of a participation in the excess profits over five per cent., in a fair revenue to the state for a public utility franchise.

The writer believed, at that time, that the action of Japan foreshadowed a new interpretation of international law, that the whole fabric of the inviolability of private property under established law controlling warfare, would tumble to pieces, and that it would be extremely difficult to interest capitalists in future foreign ventures. This vision of the future has proved true.

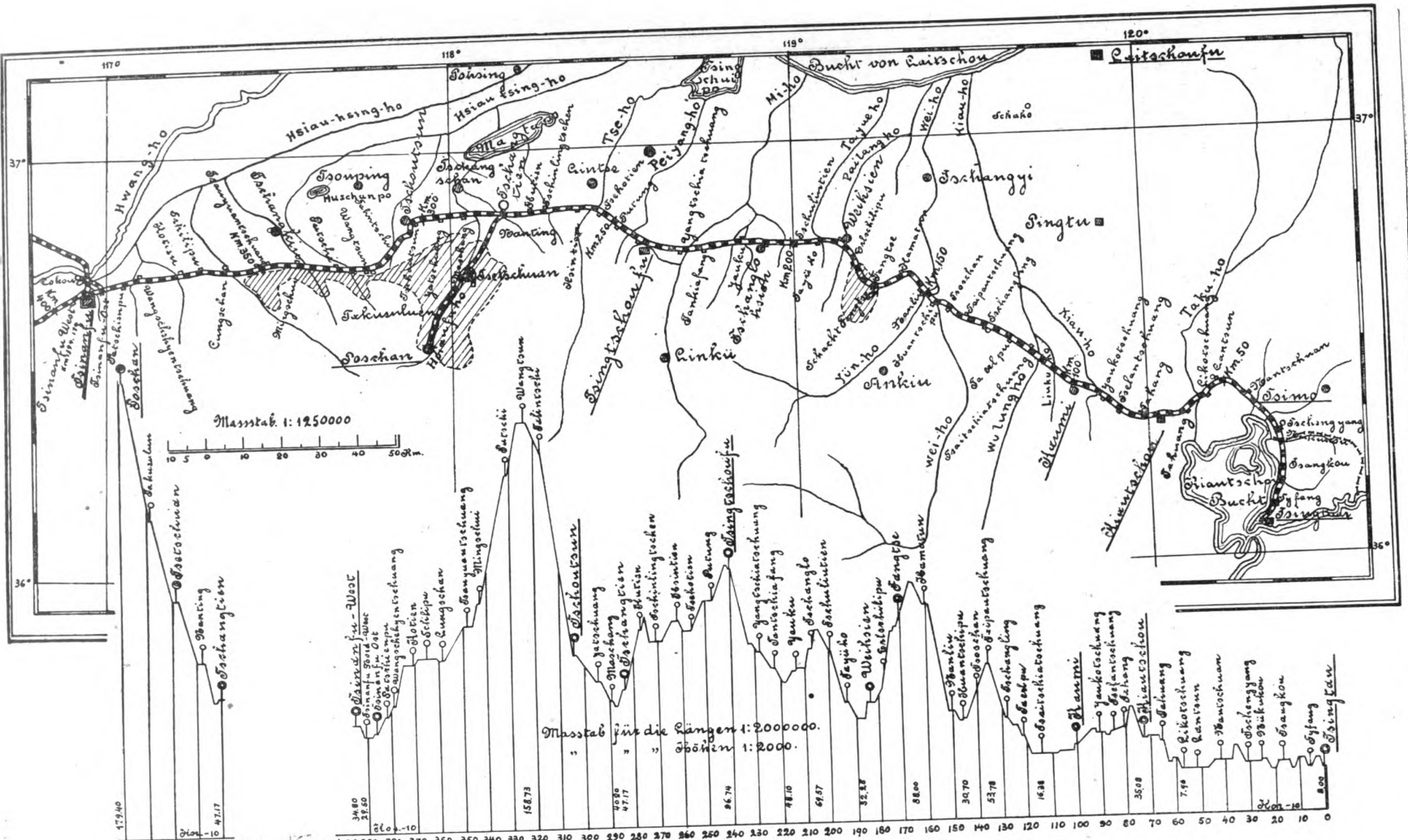
The German Shantung Railway Company, as a private enterprise, duly filed its claim for indemnity and other damages for the confiscation of its properties, but, during the war, such a claim received no notice from the Japanese government. At the Peace Conference my prophecy was fulfilled. A wholesale expropriation of German private property took place without the Allies affording any compensation to the individuals. Article 297 (6) of the Treaty reads:—

"The allied and associated powers reserve the right to retain and liquidate all property, rights, and interests belonging at the date of the coming into force of the present Treaty to German nationals, or companies controlled by them, within their territories, colonies, possessions and protectorates, including territories ceded to them by the present treaty."

Mr. J. M. Keynes in his book on "The Economic Consequences of the Peace," says that "the treatment of such property forms, indeed, a very significant and material section of the Treaty, which has not received as much attention as it merits, although it was the subject of exceptionally violent objection on the part of the German delegates at Versailles. So far as I know, there is no precedent in any peace treaty of recent history for the treatment of private property set forth below (in the treaty) and the German representatives urged that the precedent now established strikes a dangerous and immoral blow at the security of private property everywhere." Mr. Keynes expresses his opinion that "this is an exaggeration and the sharp distinction, approved by custom and convention during the past two centuries, between the property and rights of a state and the property and rights of its nationals is an artificial one, which is rapidly being put out of date by many other influences than the Peace Treaty and is inappropriate to modern socialistic conceptions of the relations between the state and its citizens. It is true, however, that the Treaty strikes a destructive blow at a conception which lies at the root of much of so-called international law, as this has been expounded hitherto."

The old conception has given place to the new. The rights of the private German owners of the Shantung railway have passed to the Japanese under the provisions of the Peace Treaty, in the same manner that the rights of individual Germans in other parts of the world have been taken over by others of the allied and associated powers. It is something that war-makers in all countries should ponder over very seriously. The defeated must pay. Woe to the vanquished! The lesson of the Peace Conference has been brought home to international finances.

Co-operation has taken the place of pre-war competition for loans



Hauptsächliche Angaben

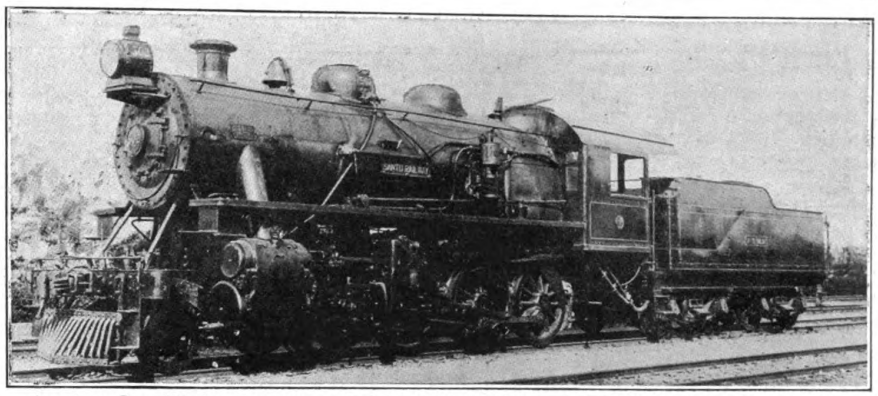
Länge der Hauptlinie Tsingtau - Tsinanfu - West:	395.373	Km
" " Zweiglinie Tschangtien - Poschan	39.2	"
" " Zechenbahn Fangtse	4.0	"
" " Zechenbahn Tsetschuan	ca 6.5	"
" des Anschlussgleises Tsinanfu - Ost - Hwangtaitschiau	6.0	"

Anzahl der Stationen:	64
" " Wasserstationen:	20
" " Drehscheiben:	8
" " Gleiswaagen:	12
" " Lokomotiven:	41
" " Gepäck- und Personenwaagen:	105
" " Güterwaagen:	1057

Eiserne Brücken:	Öffnungen:	1150	Stck.
" "	Lichtweite:	7700	m.
Gewölbte: "	Öffnungen:	561	Stck.
" "	Lichtweite:	640	m.
Gerade:	326.739 Km =	75.186	%
Krümmungen:	107.834 " =	24.814	%
Horizontale:	176.375 " =	40.586	%
Gefälle	116.937 " =	26.908	%
Steigungen:	141.261 " =	32.506	%

and concessions in the "powder magazines" of the world. The precedent established by the peace conference overturning all previous conceptions about the inviolability of private property in war time, is something that war-makers on both sides of the Pacific should carefully bear in mind.

Little profit can be derived at this stage in speculating upon the possible future status of the railway. As the matter stands, the Japanese government pledged itself orally at the peace conference, and in other documents to convert the Shantung railway and mines into a Sino-Japanese joint enterprise. The details of such an arrangement cannot be arrived at until such time as China is prepared to open direct negotiations with Japan for the settlement of the question. The railway has made wonderful progress under Japanese direction, and the mines are being developed to provide a greater output. The prosperity that has come to Manchuria can be quickly duplicated in Shantung, under some amicable and harmonious adjustment of the present difficulties.



American Consolidation Locomotives Purchased by the Japanese Railway Administration for the Shantung Railway

Undoubtedly, a great opportunity is being wasted. Even biased critics of Japanese activities in Shantung are unanimous in conceding to Japan due credit for the great advancements made in developing its commerce and resources.

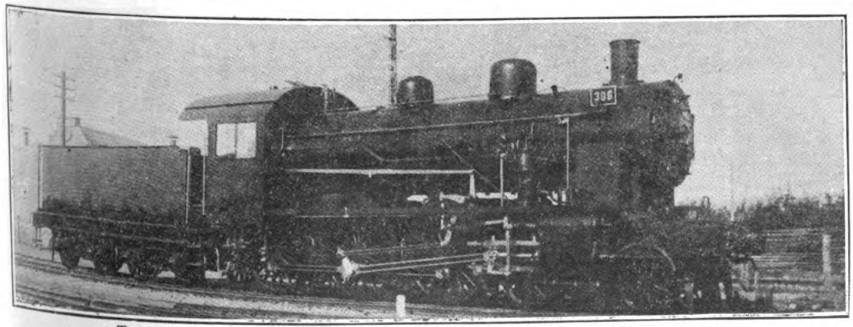
Until such time as China is placed upon her feet and full sovereignty restored in other parts of her vast territory, it seems futile to expect that Japan will surrender rights enjoyed by other powers in other parts of China. Pending such a general solution of China's troubles, there is no good reason why Japan's idea about internationalizing Tsingtau should not be adopted, and the railways and mines operated as joint Sino-Japanese enterprises, with a proper division of administrative control that will assure the continued development of these properties and the port.

Tsingtau is the only good harbor in north China: the natural outlets for the products of a vast lumberland stretching north to Peking and west to Kansu. The small ports of Hulutao, Chinwangtao, or Tientsin, can never adequately serve as the outlets for a great industrialized north China. The natural port for this vast region is Tsingtau. Political questions and international rivalries alone bar the way to the utilization of this natural outlet to its full capacity. British interests lean naturally towards any scheme that will attract this trade into Yangtze Valley outlets, while China, as things now stand, would borrow millions to create a new port on a mud flat, rather than consent to the development of Tsingtau. Early last year, the Chinese government signed a new loan agreement with Belgian and Dutch bankers for the Lung-Hai railway, which provided for the construction of a port at Haichow, as an outlet to the railway. At its best, this harbor can be developed only at the cost of many millions into another dinky little third-rate China coast port, available only to shallow draft coasting steamers. It will always be dependent upon Tsingtau or Shanghai. Why proceed with the waste of good money so badly needed elsewhere for real construction work. The Belgian Lung-Hai line from Hsuchow to the sea at Haichow, where a port must be created, serves no good purpose other than enhancing the value of private properties owned by prominent mandarins, and providing work for the Belgian and Dutch engineers and contractors.

On the north of Tsingtau lies the isolated port of Chefoo, under Chinese jurisdiction, and for the past twelve years, we have been annually told that a railway was to be constructed to connect the port with Weihaiwei; the main object on the part of the Chinese being to divert the trade from the natural outlet at Tsingtau. Here, again, is a port that even with a railway into the interior, can only aspire to a second-rate place in the trade of China.

The solution of this problem would seem to lie in internationalizing the port of Tsingtau and the Shantung railways. Instead of wasting further loans on building the Haichow-Hsuchow section of the Lung-Hai line, the funds could be better utilized in building the line from Hsuchow to Kaomi, and the Dutch could be compensated for the loss of the Haichow-Hailer contract by another equally profitable contract in Tsingtau.

Once the internationalization of Tsingtau is an accomplished fact, the other questions will solve themselves. The Kaomi-Hsuchow project and the expansion of the Shantung railway to Shuntehfu in the Peking-Hankow line, have been pooled by Japan in the Consortium. They have been internationalized. There remains, then, the one problem of the future status of the main Shantung railway; whether it should be operated as a Sino-Japanese enterprise, or whether the higher interests of Japan, China and the powers could best be advanced by internationalizing this line under the Consortium.



Type of the German Express Locomotives in use on the Shantung Railway

With Tsingtau as an international settlement, responsible to some supreme power for the maintenance of order, and the Kaomi-Hsuchow and Tsinan-Shuntehfu lines also internationalized, there ought to be some basis upon which Japan and China would be willing to put the Shantung railway into the common pot. It is unnecessary to say that the "supreme power" must be the rightful sovereign power—China.

If such a solution can be brought about, the way is cleared for progress in north China. The

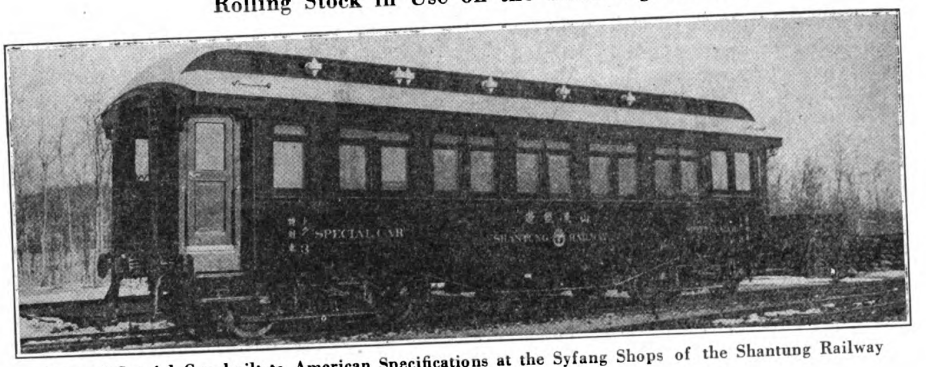
port of Tsingtau will come into its own, and discharge its natural functions as the deep water outlet to the northern half of China. Japan has taken two steps out of the three. She has practically announced her ideas on the internationalization of the port, and turned the Kaomi-Hsuchow and Tsinan-Shunteh projects into the international pot. If approached in the right spirit, she might also take the third step and accept some proposition on the basis of internationalizing the main railway artery through the province.

This is the one way to develop north China and open the door to real equal opportunity for the trade of all nations. Japanese, for the present, own the finest locations and properties in Tsingtau. They have earned the right to this preference by stepping in and doubling the size of the city and the trade of the port. But Tsingtau is capable of great expansion. There is plenty of land, and plenty of water in the bay. There is room for a great city spreading out along the waterfront, with a fine healthy residential section in the hills, the only place on the coast of China that can be compared to Europe or America. If British, Americans, or others do not care to take up properties in the present city, there is plenty of room along the bay for their own business centres. As the commerce of the port increases a newer and larger harbor will have to be built and greater railway facilities provided, so that there will be ample space for those who prefer to "flock by themselves" even in an international municipality, which by reason of the preponderance of Japanese, may be dominated politically by this element.

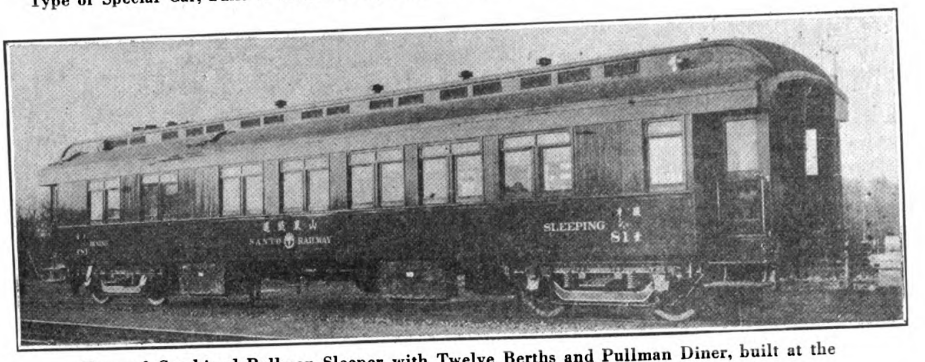
Japan does not want Shantung. She is, however, determined (and properly so) that never again, will her security be menaced by the occupation of Tsingtau as a naval base by any other power. Internationalization of this important harbor would undoubtedly fully meet with Japan's ideas, and the way would then be paved for a full discussion of the many points, involved in the conflict of interests, that would open the door to a great future for Tsingtau.

If Japan concedes something, others should also concede something for the sake of harmony. A little give and take upon all sides would end the interminable international squabble and discord. It would transfer Tsingtau into the real centre of north Chinese activity, the deep-water terminal of a system of railways that would reach far into the interior of China, and make the land throb with a new life.

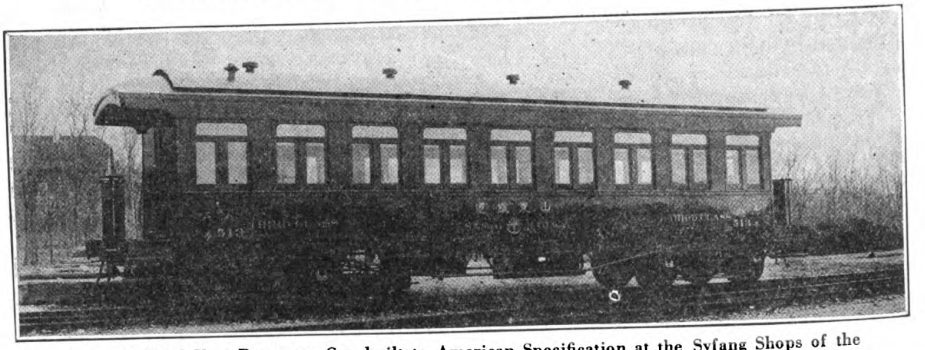
Rolling Stock in Use on the Shantung Railway



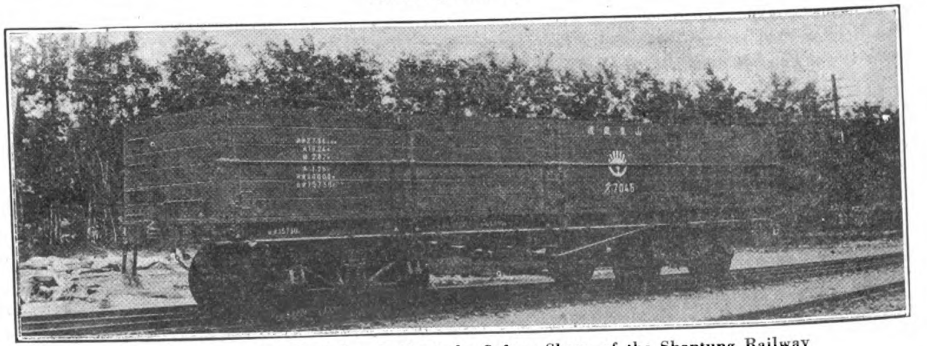
Type of Special Car, built to American Specifications at the Syfang Shops of the Shantung Railway



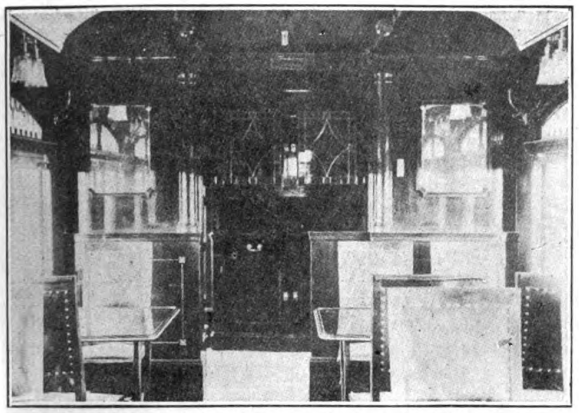
Type of Combined Pullman Sleeper with Twelve Berths and Pullman Diner, built at the Shakako Shops of the South Manchuria Railway for the Shantung Line



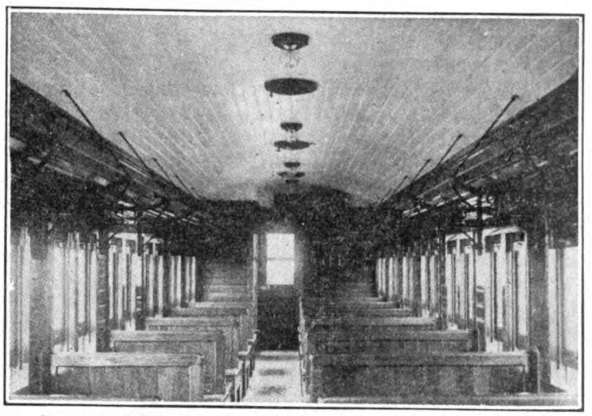
Type of Third-Class Passenger Car, built to American Specification at the Syfang Shops of the Shantung Railway



Type of Thirty-Ton Coal Car, built at the Syfang Shops of the Shantung Railway



Interior of Pullman type Dining Car, built at the Syfang Shops of the Shantung Railway



Interior of Third-Class Passenger Coach, built at the Syfang Shops of the Shantung Railway

The Shantung Railway

(JAPANESE NAME, "SANTO RAILWAY")

The following description of the original German railway is reprinted from the "Shantung Number" of THE FAR EASTERN REVIEW, November, 1914. There is no material change in this data. (Editor)

THE original capital of the German Company was 54,000,000 Marks, but when it took over the rights and property of the Shantung Mining Company on January 1, 1913, the capital was increased to 60,000,000 Marks, divided into 60,000 shares of 100 Marks each.

The grading for the road-bed began on September 23, 1899, at Tsingtau and Kiaochou. The engineers planned a single track, standard gauge line, and work was carried on in both directions, east and west, some 25,000 laborers being employed. Progress was fairly rapid, the grading of the roadbed presenting few engineering difficulties. For the greater part of its length the line runs through flat country, skirting the foot of the mountains in middle Shantung, and dynamite was only employed in a few places in the German leased territory and in a few cuttings on the western section.

Starting from Tsingtau station, which is eight metres above the sea, the railway crosses several low chains of hills between the larger rivers, and on reaching the water-shed of the Yun-ho, attains a height of eighty-eight metres, gradually ascending as far as the city of Tsing Chow-fu. Wide streams such as the Pai Cha-ho, Schykia-ho, and Taku-ho, are crossed before Kiaochou, at the head of the bay, 74 kilometres from Tsingtau, is reached, and thence to Changling, 128 kilometres from Tsingtau, the line passes through a fertile plain crossing the two rivers, Mischui-ho and Kiau-ho. West of Changling the line reaches the hilly country and passes the ranges in long winding curves to Weihsien, 183 kilometres from Tsingtau. Many rivers rise in this part of the country, two of them being spanned by bridges of nearly 300 metres in length each.

Having reached Tsing Chow-fu the line descends to a height of 40 metres near Chow-tsun, and about 20 kilometres west of that city a chain of mountains running from south to north is crossed, the height reached at Wang-tsun being 158.73 metres above sea level. From this point the line gradually descends to Tsinanfu, where the altitude is but 34.80 metres above sea level.

BRANCH LINES.—A branch line, 40 kilometres in length, beginning at Changtien, which is 47.17 metres above sea level, runs in a southerly direction up the Poshan valley, following the course of the Hsiau-fu-ho. The town of Tzechwan, the centre of the coal mines of the Company, is passed en route and the terminal station is at Poshan, 179.40 metres above the sea.

A branch line seven kilometres in length from Setchwan also connects with the Hungchan coal mines; another branch four kilometres in length joins the main line at Fangtze with the coal mines, while another branch at Tsinanfu, eight kilometres in length, gives connection with the Yellow River. In a short time a new branch seven kilometres long will be open to the iron mines at Chinlin-chen, where work has just been begun.

LENGTH OF LINE AND GRADIENTS.—The total length of the main line is 400 kilometres, or 395,373.75 metres, of which there is a level grade of 41.62 per cent. or 164,452.68 metres. The ascending grade from east to west is 29.01 per cent., the descending grade being 29.37 per cent. The straight track totals 299,323.42 metres, or 75.71 per cent., the curves absorbing 24.29 per cent.

The Poshan branch line has a length of 39,200 metres, the level grade being 30.42 per cent., and the ascending grade 69.58 per cent. The straight track totals 27,416.04 metres, or 69.94 per cent., the curves totalling 30.06 per cent.

The steepest grade on the main line is one in 150, and on the Poshan line one in 100. The sharpest curve has a radius of 300 metres.

ROAD-BED.—The road-bed is five metres wide, the slope being one in 1.5. In flat country, where floods occur, the slope is one in 2. Excavations are likewise five metres at the bottom. Ditches wide enough to carry the water which runs from the sides of excavations have been made and lined with cement plaster.

EARTHWORK.—As far as possible excavations of any considerable depth were avoided owing to the great friability of the soil. No tunnels were necessary.

Embankments are protected against the ravages of heavy rains and floods by heavy stone reinforcements of the base, in addition to which the sides have been protected with sod, and trees such as willows, acacias and alders.

BALLAST.—The stone ballast is 4.50 metres wide, and consists either of broken stones (granite or black limestone) or of pebbles, and is at least 35 centimetres thick.

BRIDGES AND CULVERTS.—The total number of bridges and culverts along the line is 1,330. Of these 1,150 are iron bridges,

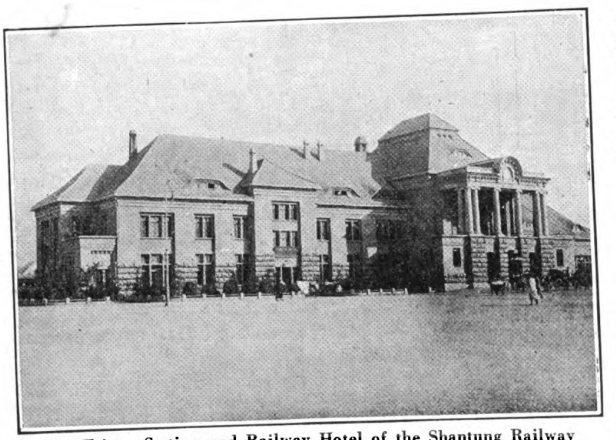
and 280 arch stone culverts. The latter vary in length, the maximum being six metres. The total length of all such culverts on the line is 640 metres.

The spans of the iron bridges vary from one metre to 46 metres, and their total length is 7,700 metres. The longest bridge is over the Tse-ho, 258 kilometres from Tsingtau, the length being 470 metres. The number and dimensions of the bridges more than 50 metres long are as follows: 50 metres to 100 metres, seventeen; 100 metres to 200 metres, three; 200 metres to 300 metres, five; 470 metres, one.

MASONRY.—The total mason work on bridges and culverts amounts to 210,000 cubic metres. The foundations of most of the large bridges are laid upon iron piles 12 to 14 metres long. In a few cases the foundations rest upon caissons.

RAILS AND TIES.—The normal length of the iron rails is 10 metres, and the weight 300 kg. each. The ties are of steel, weighing 50 kg. each. The material was all bought in Germany. The rails are ten centimetres wide at their base, 5.7 centimetres at their top, and are 12.50 centimetres high. The ties are 2.40 metres long and 8 centimetres high.

STATIONS.—There are 55 stations for all kinds of traffic on the main line, and four on the branch line to Poshan. Besides



The Tsinan Station and Railway Hotel of the Shantung Railway

these there are five stations at the end of short branches for receiving cargo only.

The majority of the stations have goods sheds. Some important stations have two, the total number of all sizes being 32. European station masters are in charge at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu West.

ROUND HOUSES.—There are 16 round houses, with capacities varying from 4 to 12 locomotives. The round houses at Tsingtau, Kaumi, Fangtze, Changtien, and Tsinanfu are under European control.

TURN-TABLES.—There are eight turn-tables with an inside diameter of 17.50 metres each.

TANK HOUSES.—There are 20 tank houses with water tanks of from 40 to 80 cubic metres each.

PLATFORM SCALES.—There are twelve platform scales of 55 tons capacity each.

OPENING OF THE LINE.—The first section of 74 kilometres to Kiaochou was opened for traffic on April 8, 1901, and further sections were put into operation during the same year. On June 1, 1902, the whole of the first half of the line, as far as Weihsien, was opened for freight and passenger traffic, and on June 1, 1904, the whole line, including the Poshan branch, was opened.

COST OF CONSTRUCTION.—The railway was five years in construction and the entire cost of construction and equipment was 52,901,266 Marks.

Following are the details:—

Land	£ 89,700
Earthwork	148,000
Level crossing and fencings	2,700
Bridges and culverts	728,000
Permanent way	759,000
Signals, blockhouses, etc.	13,200
Stations	106,000
Repairing-shops, etc.	85,000
Materials (coals, etc.)	310,000
Administrative expenses	203,000
Interest on capital, etc.	200,000
Total	£2,644,600

or, including interest on capital, about £9,200 per mile.

The longitudinal section of the road shows that the main line is made up of forty-two per cent. level, twenty-nine per cent. rise, and twenty-nine per cent. fall, with a maximum grade of six per cent. The permanent way has been constructed to sustain ordinary traffic at a speed not exceeding 37.5 miles per hour.

The survey covered in area a strip of land varying in breadth between 500 and 2,000 yards, and cost about £36 per mile, being completed at the rate of ten miles per month. The land was expropriated in accordance with Chinese law, 1*s.* 1*d.* being paid per square yard, with a surcharge of eight per cent. for land in crop and near the townships. The earthwork was sublet in contracts of six miles in length, and was paid for at schedule prices, 1*s.* 4*d.* per cubic yard for ordinary earthwork, and 10*d.* per cubic yard for rock. All bridges and culverts were standardized, as well as the wooden and steel scaffoldings used for erection.

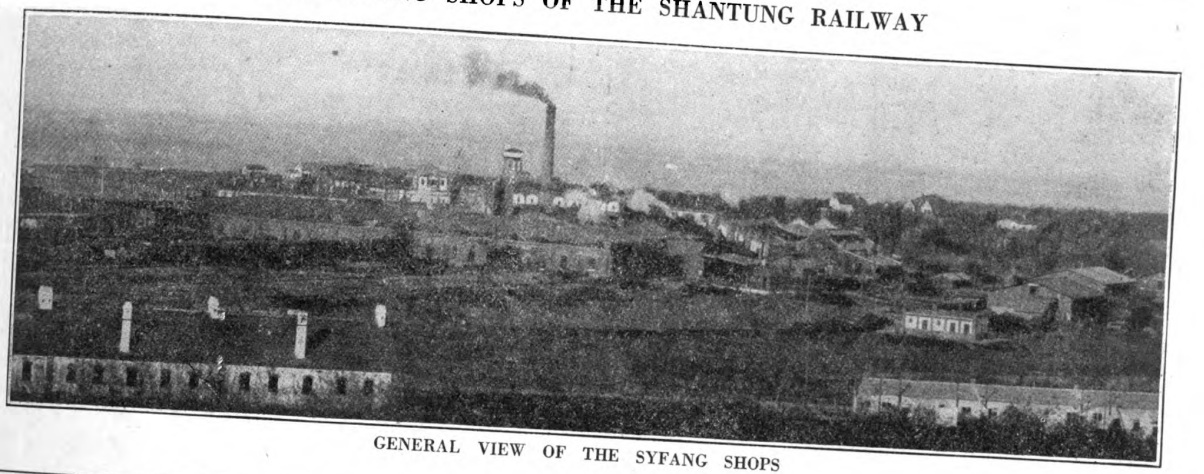
The Shantung Railway, 1921

The above general description of the line still holds good. The best reference to the railway and its work since the above was published was written by U. S. Trade Commissioner Frank Rhea, in his Special Report on Far Eastern Railways published by the department of commerce in 1917. As will be seen from the following notes on the pesent equipment of the line, the tendency of the Japanese is to replace the old German material by the products of American factories. This is in evidence very strongly in the new rolling stock. Twenty-six new consolidation engines have been purchased from America in the last four years. Other car materials to the extent of 2,278,237 silver yen, or on the neighborhood of $1,500,000 gold, has been bought. As will be noted, the total amount of purchases from America aggregate $3,046,468 from 1916 to 1920, about one-third of the total material expenditure during the period. *The budget for* 1921 *calls for the purchase of an additional* 18 *locomotives,* 293 *thirty-ton coal cars,* 11 *passenger coaches and* 12 *cabooses.*

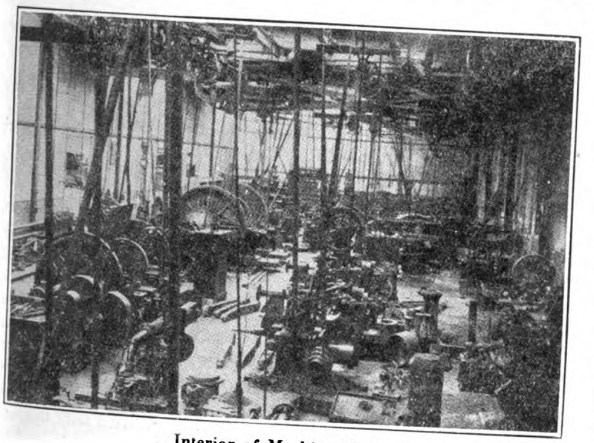
Anti-Japanese Propaganda Destroying American Markets

It is expected that most, if not all, of this material will be purchased from American manufacturers. There is, however, a growing feeling of irritation scarcely percepitible perhaps, but nevertheless existing, that American manufacturers who have derived the largest benefits from Japanese management of railways in China, should be so easily influenced against Japan in political matters by their agents in China. This new development of international trade rivalry in China, led largely by concerns whose business is openly admitted as having been built up on an anti-Japanese basis, is bound to have its effect upon Japanese purchases in America and in other places, unless these practices are terminated. American manufacturers who permit themselves to be drawn into the maelstrom of Far Eastern partisan politics by their China representatives, must, in time, expect to see their business in Japan undermined and handed over to com-

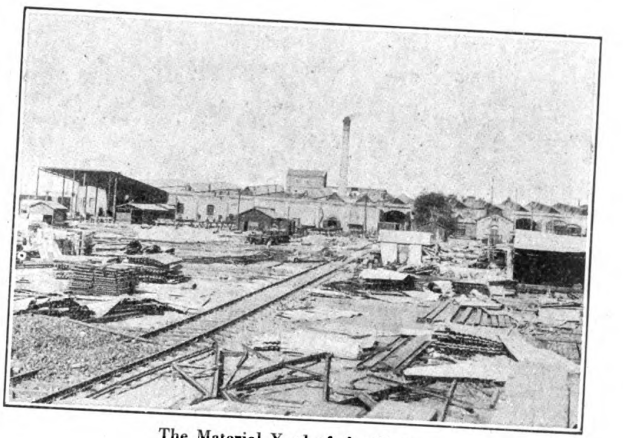
THE SYFANG SHOPS OF THE SHANTUNG RAILWAY



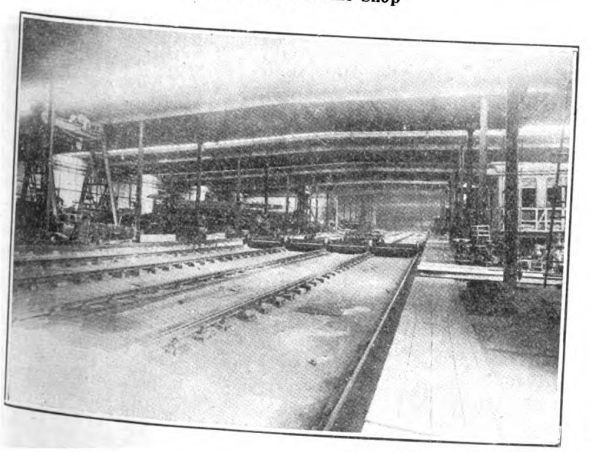
GENERAL VIEW OF THE SYFANG SHOPS

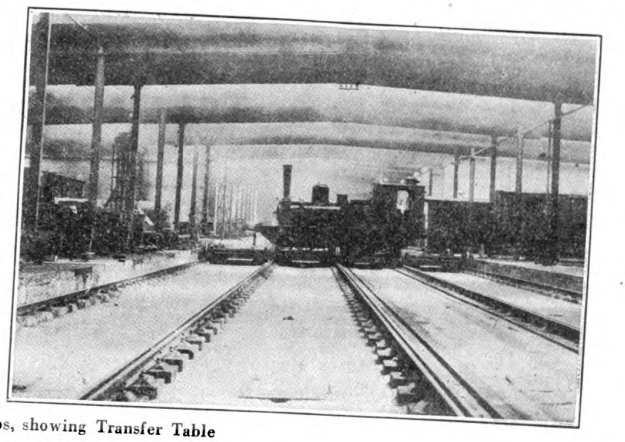


Interior of Machine Shop



The Material Yard of the Shops



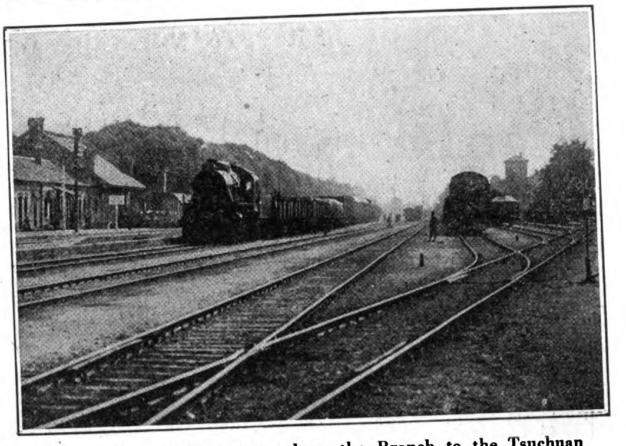


Views in the Locomotive Shops, showing Transfer Table

petitors. For the time being, and for the reason that European manufacturers of railway supplies cannot compete in the matter of deliveries with Americans, these orders from Japan will undoubtedly continue to be placed in the United States, amongst manufacturers taking no part in these political movements. There is, however, strong evidence that Europeans are taking full advantage of the opening presented by this anti-Japanese agitation encouraged by Americans in China, and are pressing the Japanese for such share of the orders as they can at present supply.

The following data on the present equipment and operation of the Shantung Railway is up-to-date, and the most important items extracted from the report of the civil administration dated

Poplar Forest Planted by the Railway Administration at Lungshan Station



The Station at Changtien, where the Branch to the Tsuchuan Mines and Poshan joins the Main Line

November 30, 1920, forwarded to Tokyo, for presentation to the Diet:—

Budget of the Civil Administration, 1921

Total Revenue	Gold Yen	23,513,255
,, Expenditures...	,,	23,513,255
Extraordinary Expenses	,,	8,110,846
Maintenance Expenses	,,	15,402,409

COMPARISON WITH 1920 BUDGET

	1921 Budget	1920 Budget
Revenue	23,513,255	20,138,771
Shantung Railway ...	21,255,602	18,514,726
Various Works at Tsingtau	2,257,653	1,624,045
Expenditure	23,513,255	20,138,771
Civil Administration ...	2,359,258	3,943,872
Railway ,, ...	19,485,887	15,946,923
Communication Dept. ...	1,668,110	1,147,976

REVENUE

	1921	1920
Total	23,513,255	20,138,771
Railway...	21,255,602	18,514,726
Passengers	3,128,650	2,775,037
Freight	8,335,687	7,427,850
Warehouse	149,100	105,150
Coal	5,214,750	4,120,741
Railway	2,025,000	2,400,000
Wharf	1,517,637	1,201,860
Miscellaneous	309,681	180,631
Hospital	75,097	107,277
Different Works at Tsingtau...	2,257,653	1,634,045
Electric	628,589	545,008
Postal	1,026,827	637,131
Stamps	3,835	2,274
Abattoir	259,509	270,778
Waterworks	313,450	186,808
Forestry	25,443	22,046

Shantung Railway Notes

ROLLING STOCK.—*Locomotives.*—No. in 1913, 41 ; in 1919, 79.

In the six years that the line has been operated by the Japanese the number of locomotives has been doubled. The number and types of locomotives follow :

Type	6 Coupled	8 Coupled Radial	10 Wheeler		Mogul Forney		8 Coupled	Consolidation		
Symbol	S	R	T	T-1	T-2	M	E	C	C-1	C-2
Number	9	7	17	6	7	4	3	7	15	4

NEW LOCOMOTIVES.—From 1913 to 1915, no new locomotives were purchased. In 1916, three consolidation engines were ordered from the American Locomotive Company. In 1918 four more of the same type were bought from the same company. In 1919, two six-coupled and one ten-wheeled German type locomotives were built at the Syfang Shops, four consolidations were ordered from the Baldwin Locomotive Works, and five more of the same type from the American Locomotive Works, a total of twelve new engines for the year. In 1920, ten more consolidation engines were ordered from the American Locomotive Works. Tenders for 15 locomotives are expected to be ready by April, 1921.

PASSENGER CARS.—The passenger car equipment shows little increase over the total of the German figures for 1913, although many of the old German cars have been scrapped and superseded by others that conform to American practice. The present equipment consists of 122 cars as against 110 for 1913. Private saloon car, 1; special car, 5; combination sleeper and diner, Pullman style, 6; dining cars, 2; 1st and 2nd class passenger coaches, 14; 2nd class passenger coaches, 5; 2nd and 3rd class passenger coaches, 8; 3rd class passenger coaches, 72; baggage cars, 2; baggage and mail cars, 4; mail cars, 3; Total, 122. Exterior and interior views of these cars are seen on pages 90, 91. The combination sleeper and dining car is built to the Pullman pattern, and fitted with the most up-to-date appliances, toilet, wash room, etc. These were built at the Shakako Works of the South Manchuria Railway. The balance of the passenger and freight cars have been assembled and built at the Syfang Shops.

FREIGHT AND SPECIAL SERVICE CARS.—Under German control of the line, the report for 1913 returned 1,051 freight and special service cars. These have been increased to 1,416 under Japanese management. The greatest increase is in the covered or box cars, whose number in 1913 was 283, and in 1920, 361. The number of coal cars in 1913 was 557, and in 1920, 708. The present equipment consists of:—box cars, 361 ; gondola cars, 34; timber cars, 100; coal cars, 708; ore cars, 50; coke cars, 75; lime cars, 20; stoke cars, 1; fish cars, 3; tank cars, 13; cabooses, 46; tool cars, 4; weigh bridge calibrating car, 1. Total, 1,416.

PURCHASES OF MATERIALS.—The purchase of materials for the Shantung railway is under the bureau of finance of the railway administration, and as a rule is made by public tender, or by purchase in the open market from manufacturer's representatives having offices in Tsingtau. The customs reports have no record of imports of railway materials, as the railway being a government concern for the present, pays no duty under the provisions of the German treaty. Considerable purchases have been made in Japan especially from the Japanese Government Steel Works at Yawata, to which the railway is under contract to supply about 150,000 tons of iron ore, f.o.b. Tsingtau annually. Since 1916, the railway authorities have purchased materials to the total value of 15,418,839 in silver yen. The value of the silver yen has varied greatly with the fluctuations of the metal, but it is fair to strike an average of .66 gold for the period under

survey, or a conversion into gold of approximately $10,397,226. The actual cost of construction of the railway was given in the German official report as 2,644,600 pounds sterling, or, about $13,000,000 gold.

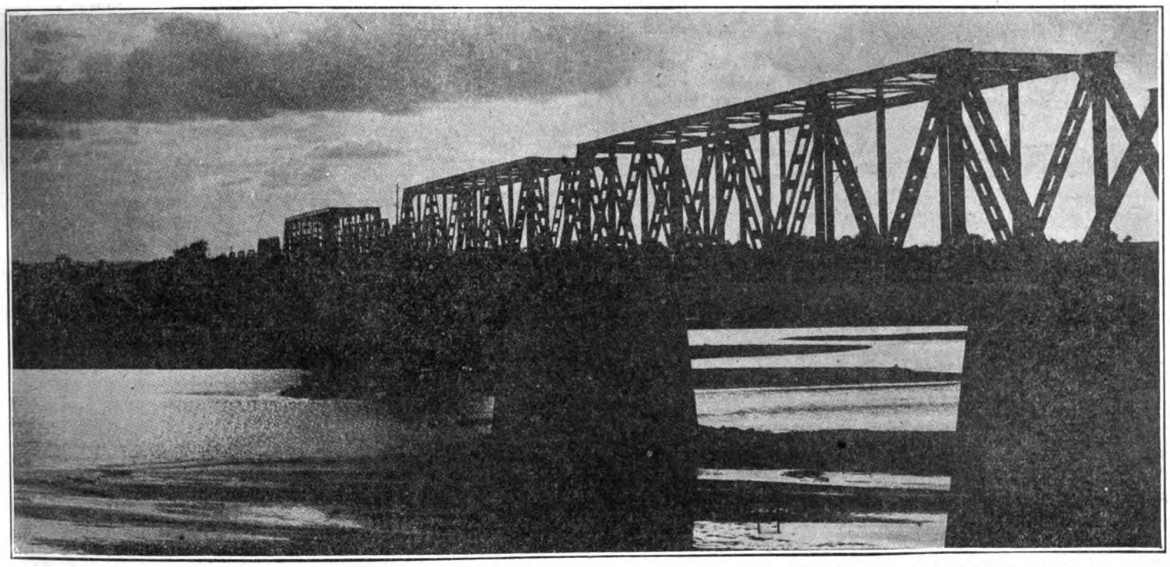
PURCHASES FROM THE UNITED STATES.—As in the case of the Japanese operated South Manchuria Railway, the management of the Shantung line has purchased about one-third of its total materials from American manufacturers. The following official statement will show how these American purchases have been distributed during the five years ending 1920:—

	Silver Yen
Steel and Iron	592,199.737
Lumber, ...	124,536.468
Special Brick	14,166.920
Paints	32,548.012
Office Furniture	26,842.116
Machine Tools	399,384.780
Rails, Points, etc.	199,525.517
Rolling Stock	2,278,237.226
Cast and Rolled Pipes, Fittings	141,707.648
Electrical Materials	28,603.885
Bolts, Nuts, Rivets	18,680.505
Oils	461,881.995
Building Materials	14,387.949
Stationery	12,613.178
Miscellaneous	224,587.363
Total	4,569,703.229

or, at the same rate of exchange (.66⅔) about $3,046,468 gold.

Under German direction. American and other European manufacturers supplied nothing, not even a nail, to the Shantung Railway. The Japanese have opened the door to American materials and converted the line into one on which American specifications and practice predominate. Westinghouse air brakes have completely supplanted the old German equipment, American boiler tubes, Worthington pumps, car-heating and lighting apparatus, couplers, etc., are found on all the cars. Riding in a comfortable Pullman, one sees rows of American locomotives sticking their heads out of the round houses as the train passes through divisional headquarters. It is not, however, until the workshops have been visited, that standardization of the line along American principles is fully appreciated.

WORKSHOPS AND EQUIPMENT.—The main workshops of the Shantung Railway are located at Syfang, a short distance from the Tsingtau terminal. Originally of moderate size to meet the requirements of the German line, the shops have been considerably enlarged under Japanese management. During 1920, an iron and brass foundry was added. A few locomotives have been completely constructed at these works, and all the cars are now made here. About 10 freight cars per month are built at the shops, wheels, axles and fittings coming from America. In 1920, the shops built 10 first and second-class passenger cars and 150 freight cars. A typical 30-ton coal car and special car turned out at the works are illustrated on page 89. The equipment of the workshops is largely American, and the extent of the purchases from 1916 to 1920 can be seen from the following official memorandum:—



Railway Bridge over the Taku-ho, at Kilometer 114, length 272 meters. The centre span of this Bridge was carried away by a flood in 1917 The Repairing and Strengthening of this Bridge is the only important Work of the kind carried out under Japanese Management of the Railway

Year	Machine Tools, etc.	Materials	Total
1916 ...	9,603.200	59,527.780	69,130.980
1917 ...	31,026.560	—	31,026.560
1918 ...	34,685.070	145,824.090	179,809.160
1919 ...	123,100.710	71,813.380	194,914.020
Totals ...	198,415.540	276,465.180	474,880.720

The above figures are in silver yen, and at an exchange of .666, the total is equivalent to $316,586 gold.

The purchases for 1920 amount to 222,236.99 in gold yen, for machine tools, and 467,178.60 gold yen for materials, a total of G.Yen 689,415.59, or $394,707, a grand total of $661,293, expended in five years for American machine tools and materials.

Some of the more important machine tool purchases are enumerated below with their prices in silver or gold yen.

1916. One 20-in. drilling machine, Y.1,232; one 4-ft. 6-in. radial drill, 1,844; one vertical screw power testing machine, 4,305 (silver yen).

1917. One Harty flue welding machine, 2,340; one screwing machine, 3,250; one bolt and rivet making machine, 9,899; one half-ton air hammer, 8,856; one air compressor (silver yen).

1918. Three pneumatic drills, 2,480; dies and headers, 2,419;

all geared drilling machine, 2,234; universal radial drilling machine, 2,239; universal milling machine, 5,427; one steam hammer, 17,455 (silver yen).

1919. One reversible motor drill, 1,918; 30-ton locomotive crane, 57,630; one all geared drill, 3,207; wheel lathe, 16,354; Fosdick radial drill, 3,988; Harkness flat turret lathe, 4,515; 24-in. back geared shaper, 2,294; 16-in. crank shaper, 2,730; all geared 24-in. drill, 1,975; universal milling machine, 3,950; 3-ft. high speed plane radial drill, 2,495; Sibley sliding head drill, 28-in. 2,500; Barnes 34-in. sliding head drill, 1,075; Ryerson slotting machine, 8,234; 6-in. Davis high speed cutting off machine, 2,940; Landis boly cutter, 1,495; etc. (silver yen).

1920. Prices in gold yen. One link grinding machine, 19,970; gap grinding machine, 12,000; boring and turning mill, 15,800; guide bar grinding machine, 17,000; air compressor, 30,000; air receiver, 3,365; electric drill motor, 3,834; 79-in. heavy driving wheel lathe, 45,700; cylinder boring and facing machine, 50,600; Ansonia friction testing machine, 8,060; motor, 2,850; electric arc welding machine, 8,470; universal flue cleaning machine, 2,529.

TRACK MATERIALS, AND BRIDGES.—The Germans laid the line with a specially designed rail weighing about 60 pounds but with a head and girder strength equivalent to 70 pounds American standard. A considerable stock of rails and joints were left by the Germans, which have been utilized by the Japanese in repairing the line when necessary. Wherever they have had occasion to purchase new rails for the short extensions and special work, they have used a 70 pound rail, which, I understand, has been furnished by the Japanese Government Steel Works at Yawata. The practice of replacing the old rail with the heavier one will be carried until the line is entirely laid with the 70-lb. rail. There has been some talk of double tracking the line, but conditions do not as yet warrant such an expense, at least, not until further extensions towards the west are carried out. The rails are laid in steel ties of German design which have given excellent results, but the Japanese are replacing these gradually with wooden sleepers.

The uncertainty as to the future status of the line arising out of the delay in arriving at a settlement of the Shantung question, has contributed to postpone any radical improvements which must be carried out before the railway can fulfill its legitimate function in developing the province. The rapidly increasing volume of freight can be economically hauled only by the use of heavier trains and locomotives, but here the Japanese management are confronted by the lightness of the bridges designed for loading not in excess of Cooper E-35. The total number of bridges and culverts along the line is 1,330. Of these 1,150 are of steel. The spans of these bridges vary from one meter to 46 meters, and their total length is 7,700 meters. The longest bridge is over the Tse-ho, 470 meters. The number and dimensions of the bridges over 50 meters long are as follows:—50 to 100 meters, seventeen; 100 to 200 meters, three; 200 to 300 meters, five; 470 meters, one.

In 1912, the total volume of freight carried was only 717,189 tons. In 1920 this had increased to 1,733,375 tons, about 150 per cent. In order to handle the constantly increasing traffic which must come from the development of the coal and iron mines, the Japanese are desirous of replacing the light bridges with heavier structures in order to increase the size and weight of locomotives and trains. This important work, however, cannot be undertaken until the political questions are settled and a final agreement reached as to the future ownership and management of the railway and mines.

Under these conditions, no new bridge work has been carried out under the Japanese management, except in the few cases where it has been necessary to replace those destroyed by the Germans in 1914, and the few spans carried away by flood action. In this connection, the only important piece of work has been the reconstruction of the bridge at Km. 144 over the Taku-ho, the central pier of which gave way under a heavy flood. The bridge has been greatly strengthened in the rebuilding.

Passenger and Freight Receipts

Year ending Nov. 1919			Year ending Nov. 1920		
No. of Passengers		Receipts	No. of Passengers		Receipts
2,145,152		S. Yen 1,467,573	2,550,050	tons	S. Yen 1,994,271
		EXPRESS PACKAGES			
1,654 tons	,,	52,902	1,516	,,	,, 54,892
		FREIGHT			
946,412 ,,	,,	3,449,140	1,031,363	,,	,, 3,758,996
		FREIGHT			
732,700 ,,		—	826,785	,,	—
		MISCELLANEOUS			
43,446 ,,		—	—		, 41,524
		TOTAL FREIGHT			
1,679,112 ,,		—	1,858,148	,,	—
		TOTAL RECEIPTS			
—	,,	5,013,461	—		,, 5,849,683
		WHARF REVENUES			
—	,,	669,964	—		,, 706,246
		WAREHOUSE REVENUES			
—	,,	68,293	—		,, 91,714

Output of Mines

1919		1920
425,106 tons	Szuchuan Coal Mines	504,250 tons
54,687 ,,	Fangtse Coal Mines	120,551 ,,
479,793 ,,	Total Coal Output	624,801 ,,
114,751 ,,	Chinglingchen Iron Mines	122,935 ,,

TOTAL REVENUE AND EXPENSES OF RAILWAY DEPARTMENT

Year ending Nov. 1919	Rev. G.Y. 11,729,070	Exp. G.Y.	15,220,823
,, 1920	,, 17,419,584	,,	18,174,295

RECEIPTS.—The receipts for 1919-1920 are classified as follows:

	1919 (Gold Yen)	1920 (Gold Yen)
Passenger	2,709,481	3,666,568
Freight	5,790,998	6,374,109
Miscellaneous	229,562	325,405
Coal Sales	1,734,834	3,407,913
Wharf Receipts:.	1,176,721	1,197,705
Warehouse receipts	88,272	219,501
Iron Ore	—	1,947,637
Total	11,729,070	17,338,839

RAILWAY EXPENSES.

	Year ending Nov. 1919	Nov. 1920
Extraordinary Budget 1914	15,220,823	14,438,791
Salaries and Wages:—		
Officials	527,525	507,979
Employees	335,519	312,036
Laborers	161,199	158,540
Bonuses and allowances	100,753	216,899
Temporary allowances (equalization of exchange)	432,982	747,276
Travelling expenses	30,005	37,402
Clothing and uniforms	8,024	7,457
Postage	1,587	1,282
Stock Feed	695	2,361
Medical	—	27,697
Materials	1,190,188	1,596,044
Other purchases	228,455	348,361
Maintenance	319,924	374,650
Rolling Stock	585,651	730,014
Operating	6,528,724	5,925,060
Miscellaneous	46,249	104,225
Refunds...	980	442
Mining Department	4,097,947	4,625,800
Chinkingchen Iron Mines	2,187,766	819,288
Ssuchuan Coal Mine Equipment	152,313	—

There is a supplementary or Part 2 to the expenditures for the communication department of the civil administration up to

September 1920, which has not been translated in time for this article.

Organization and Management

The management of the railway is directly under the civil administration of the Tsingtau government. On October 1, 1917, a new set of regulations for the management of the line was promulgated, which, according to other competent authorities, is very complete and comprehensive. Trade Commissioner. Frank Rhea, whose splendid report on Chinese railways was issued by the Department of Commerce in 1919, remarks concerning these regulations, as follows :

"Two points that merit particular attention are, first, the inclusion of the mining operations under the direction of the railway department; and, second, the provision of a "bureau of traffic control." This latter represents a partial step toward the commercializing of the railway, but, as this bureau also has charge of the station-operating forces, it is not a distinctly separate branch, like the traffic department of our American railways. This organization, like that of the South Manchuria Railways, shows the careful and painstaking arrangements that the Japanese have taken to insure success." The following is a translation of the Japanese text of the ordinance of October 1, 1917, putting into effect these regulations :

ARTICLE I.—The following five bureaus shall be established in the railway department of the department of civil administration in the Tsingtau army headquarters and a chief shall be appointed in each bureau : bureau of general affairs ; traffic control ; operation ; engineering ; finance.

ART. II.—The bureau chiefs shall be appointed from railway secretaries or railway engineers, and they shall control their respective affairs, supervising their staffs under the direction of the director of the railway department.

ART. III.—The bureau of general affairs shall have charge of the following business: (1) Confidential matters ; (2) personnel ; (3) correspondence, compilation of rules, etc. ; (4) investigations and statistics ; (5) assignment of quarters ; (6) training of employees ; (7) leasing of houses and lands ; (8) all matters not included in the functions of other bureaus.

ART. IV.—The bureau of traffic control shall have charge of the following business : (1) Traffic on the railways ; (2) distribution of cars ; (3) warehousing.

ART. V.—The bureau of operation shall have charge of the following business : (1) Operation of trains ; (2) correspondence relating to operation ; signaling ; and conduct of railway.

ART. VI.—The bureau of engineering shall have charge of the following business : (1) New construction and repairs, railway, and buildings ; (2) operation of electric power houses for railway purposes ; (3) control of lands and buildings in railway use.

ART. VII.—The bureau of finance shall have charge of the following business : (1) Preparation of the budget and the settlement of accounts ; (2) receipt and disbursement of cash and properties and custody thereof ; (3) purchases of materials and disbursements in connection therewith ; (4) inventories of properties.

ART. VIII.—The wharf office shall be established within the railway department and shall have charge of the docking and clearing of vessels, the loading and unloading of cargo, and control of the wharves and properties connected therewith.

ART. IX.—A workshop shall be established in the railway department and shall have charge of the designing of rolling stock and machinery and the construction and repairing thereof.

ART. X.—The bureau of mines shall be established within the railway department. It shall be composed of three sections : (1) business, (2) excavation, and (3) sale, which shall have charge of such matters as underground work in the mines, allied manufacturing industries, sale of products, and control of the properties.

ART. XI.—The details of the organization and operation of the different bureaus, the wharf office, the workshop, and the bureau of mines shall be determined by the director of the railway department with the sanction of the commander-in-chief of the Tsingtau garrison.

At the present time there are 9,362 employees on the salary list in addition to 3,954 Chinese and 1,128 Japanese day laborers.

Proposed Rebate System.—In order to promote the industrial development of Tsingtau, a proposition has been submitted to the Japanese Diet, for the approval of freight rebates on certain raw products destined for factories located within the Leased Territory. Rebates are also proposed for summer shipments of coal and coke from the mines to the sea port, in order to stimulate production during the slack season and obviate the rush for cars during the winter. Wheat and flour also come within this new project.

Shantung Coal and Iron Mines

The Fangtze Group

I.—The Wei-hsien Coal Fields

THE coal fields of Wei-hsien are remarkable for the irregularity in the distribution of its coal seams ; and the preliminary boring trials indicated that the whole of the surrounding country was at one time the scene of violent volcanic eruptions, which so disturbed the coal deposits that nearly a whole year was lost by the mining engineers in finding a continuous seam.

The theory advanced to account for the pockets of coal embedded in the granite which were discovered and exploited by the Chinese is that the action of water on the uneven surface of the subsidiary bed of granite caused deposits of coal-forming vegetable matter in the crevices, where they could not be washed away, leaving the upper surface of the granite bare. The remains of the Chinese shafts are distributed in small clusters where these pockets are found, and are separated from each by the out-cropping granite. As the Chinese miner cannot go deeper than 180 feet, on account of his inability to cope with the increasing volume of water which has to be removed to permit of work being carried on, it is not known how deep these pockets are. Their lateral area is, however, so small that the Chinese have practically ceased to mine them ; and as they were valueless as mines worked under modern principles, the engineers turned their attention to other places where coal had not been found on the surface. After boring for a year, during which only granite and volcanic tufa were found, they struck a seam of coal about 9 feet thick, at a depth of 450 feet, running from north-east to south-west. A shaft was sunk, and mining operations commenced. The Wei-hsien coal is bituminous containing about 30 per cent. of gas ; it burns with a clear flame, and does not cake like the Japanese coal, and it has also the advantage of having a lighter smoke.

As a result of the special investigation of the Wei-hsien fields, the company decided to erect mining works there to provide for an output of from 600 tons and a probable increase to 1,000 tons daily. This work was commenced in 1901. When the mine

was opened it was found there were three strata, the top one of which 2 metres thick was not worth mining ; 40 metres beneath this in a depth of 175 metres the principal stratum was found of about 4 metres depth. The coal contains about 30 per cent. of gas and about 15 per cent. ash, and shows a heating power of almost 7,000 calories. Porphyrite presses closely on the coal in parts. A third stratum 35 metres further deep, of about 3 metres depth, is shown to be robbed of a great deal of its gas in parts by the porphyrite, but in better situations has still 20 per cent. of gas, although unfortunately it contains quite as large an amount of ash. Mining was therefore possible only in the principal layer, whilst the under stratum was used as far as possible for inland supply. As expected, the coal was used largely, for stationary boilers and heating coal in the private and industrial establishments in the neighboring region and the regions beyond as far as Chingchoufu.

The output did not prove to be so large as was expected at first, so it was decided to make no further extensions to the mine, but to return to Hungshan where the second of the mines belonging to the company is situated.

The statistics of the Wei-hsien mine for the various years were as follows :—

1902/03	9,178.62	tons
1903/04	50,601.03	,,
1904/05	100,631.06	,,
1905/06	136,990.00	,,
1906/07	164,437.05	,,
1907/08	149,307.00	,,
1908/09	250,214.05	,,
1909/10	273,354.05	,,
1910/11	193,497.05	,,
1911/12	205,185.00	,,
1.4.12-31.12.12-126.215,00 tons 1913 ...	199,000.00	,,

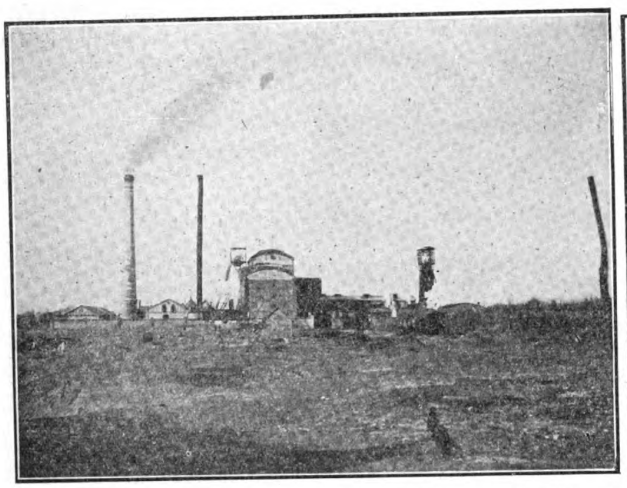
The works in Fangtze comprise a double shaft, a large repair shop with foundry, saw-mill, coal separation and shipping department, coal washer working at rate of 80 tons daily, a briquette manufactory for 30 tons daily output.

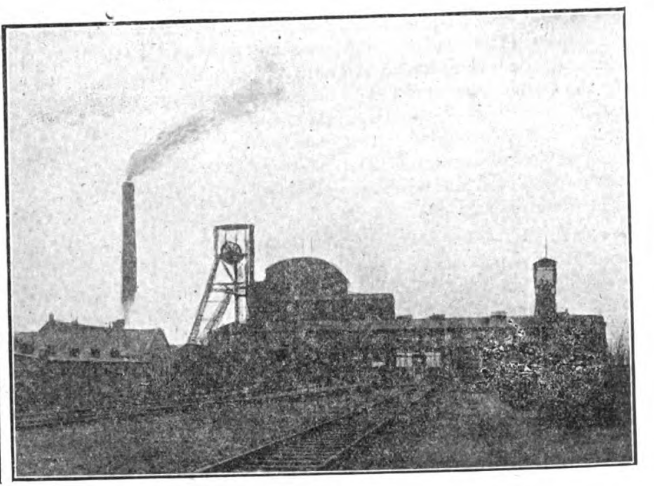
There were on the average about 25 Europeans employed in Fangtze, and 2,000 Chinese. The Europeans lived in a colony together.

In the photographs given, No. 1 shows the works with coal washer and briquette factory seen from the south, picture No. 2 shows the mine entrance from the west, pictures 3 and 4 the arrangement of both shafts viewed from the east side.

The above official description of the old German Fangtze mines is reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914. The following data on the actual condition of these workings was obtained by the publisher of THE FAR EASTERN REVIEW, upon a personal visit on January 16, 1921.

It appears that the Germans disabled some of the machinery at the main Fangtze mine, described above, with the consequence that the mines became flooded, and it has been impossible to get them again in working order. The Japanese have, therefore, concentrated their efforts in sinking other pits in the adjacent coal-bearing area, trying to reach a deposit or veins which will warrant extensive exploitation. The general location of these new pits and test shafts are shown on the map of the district.





THE FANGTZE COAL MINE—GENERAL VIEWS FROM THE EAST

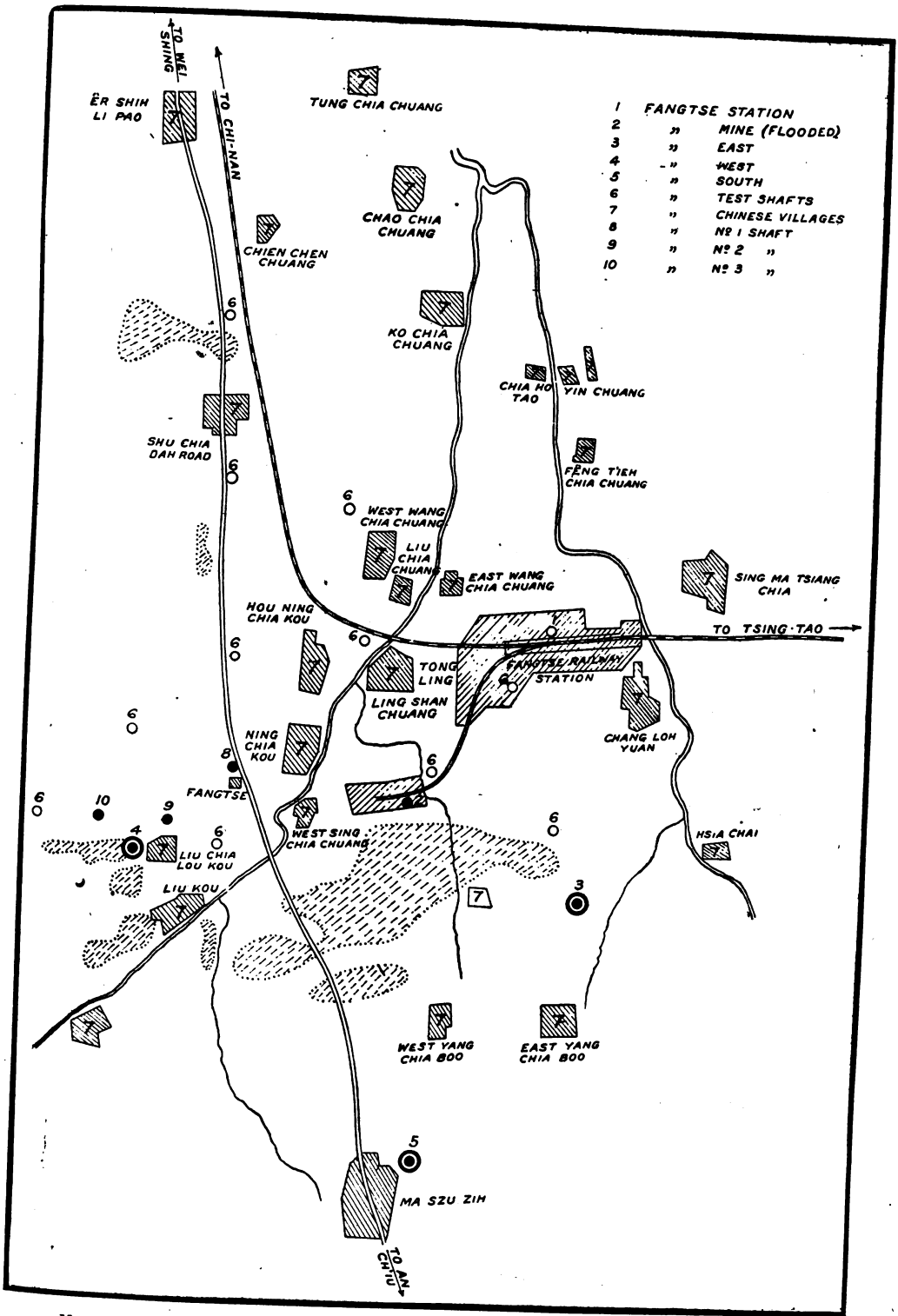
This mine is completely flooded and has been abandoned by the Japanese. The hoisting engines and other machinery have been dismantled and installed at the Shilichuang Branch Mine of the Tsuchuan Colliery in the Poshan district. The Briquette Plant remains intact and is now being repaired and placed in working order to manufacture briquettes for the use of the Japanese navy.

II.—Fangtze East Mine

This mine is one of the new ones opened by the Japanese about one mile south-east of the original Fangtze shaft sunk by the Germans. A shaft has been sunk to a depth of 236 feet, the level of the old Chinese workings, and a 30° incline driven to a depth of 324 feet, where a new coal body is being developed. The output from March to December 1920, was about 30,000 tons, all of which was sold within the province or deposited in the Central Fangtze yard. Its present output is approximately 150 tons per day, but could be rapidly increased by the employment of extra labor. The output is regulated at present by the railway budget appropriation for its working. The hoisting engine installed last year is from the Fukuoka Iron Works, of Kyushu, Japan. The reare three boilers, two of which were taken from a Japanese warship, and the third is a Lancashire type from the Sakaigawa Iron Works of Osaka.

III.—Fangtze West Mine

This mine, located two miles to the west of the main Fangtze shaft, producing about 100,000 tons per year at present, is the most important of the new shafts sunk by the Japanese. There are four shafts from 120 to 130 feet deep, 1 for hoisting, 1 for workmen and materials and two for ventilation. Constant pumping is necessary to keep the galleries free from water. There are twelve pumps installed underground. The Japanese engineers an driving a 10° incline 1,014 feet long from the 120 feet level and hope to



Map of the Fangtze Coal Region, showing New Mines and Test Shafts being worked by the Japanese

strike the lower coal strata at 330 to 350 feet. Other galleries are being opened at the higher level.

The mechanical equipment is a hodge podge of second-hand material, which, however, fully answers the purpose for the preliminary development work now in progress. Three marine and three small Lancashire boilers, an old German hoisting engine and a nondescript belt driven dynamo complete the plant.

In 1920, the output was about 100,000 tons, but is now about 200 tons per day. When working at the maximum of 380 tons per day, about 800 miners are employed, but with the present output of 200 the force is 450. There are 28 Japanese employees of all kinds.

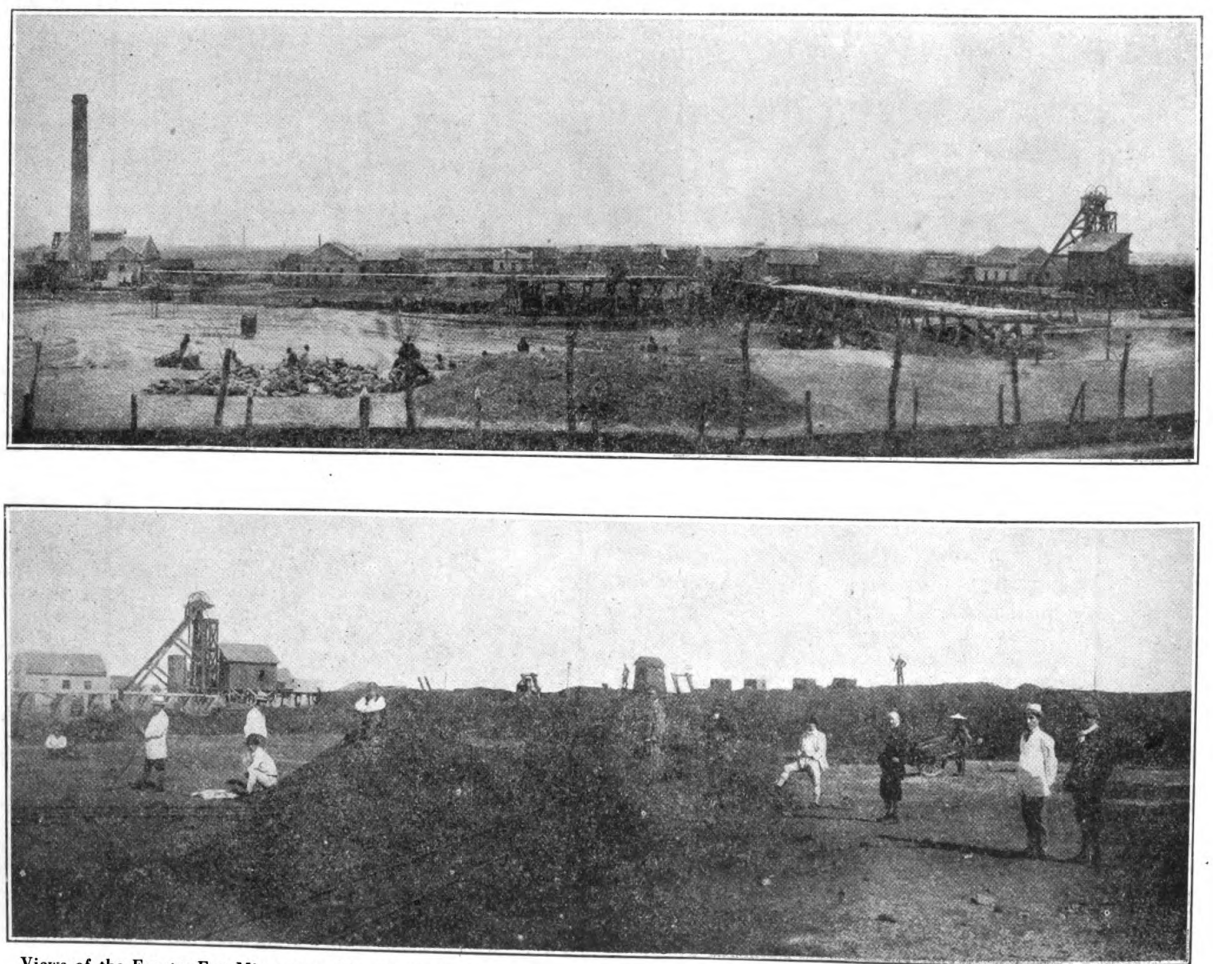
IV.—Fangtze North and South and Central Mines

The original German workings extended underground on a general easterly direction from the Fangtze shafts, but as these have all filled with water, the Japanese have sunk other shafts far enough away from the old workings in order to tap the veins in more favorable places. In addition to the east and west mines above described, the Japanese have sunk shafts in what are called, the North, South and Central Fangtze Mines. The north and central shafts as yet are not producing, while the south mine had a very nominal output for the last year. This group is still in process of development, and are largely in the nature of tests. Several other test shafts have been sunk in the vicinity as will be noted on the accompanying map, but as yet no reports are available as to the results obtained.

V.—The Old Fangtze Mine

The original Fangtze mining works opened by the Germans comprised a double shaft with large repair shop with foundry and saw-mill, coal separator and loading bins, washing machine working at the rate of 80 tons per day, and a complete briquette plant having a capacity of 30 tons per day.

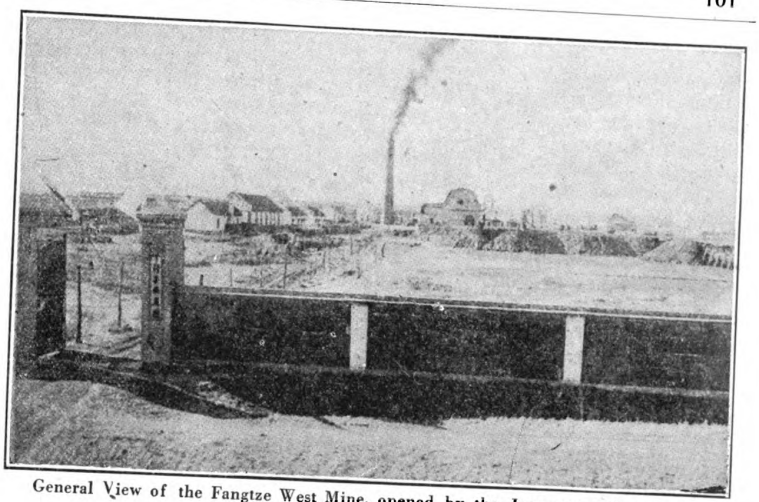
The main hoisting plant and other essential machinery of this plant has been dismantled and set up at the Shilichuang branch of the Tsuchuan mine. Only the briquette factory remains intact. The complete machinery for this plant came from Schuchtermann and Kremer of Dortmund. The two briquette machines, mixer and dryer are all of the Couffinhal system. In addition to the main briquette machines, there is a smaller one for making egg coal or boulets for house consumption. This entire plant with its main engine, elevators, shafting, etc., all of the best workmanship, installed in a separate building, fitted



Views of the Fangtze East Mine, opened by the Japanese and now producing about 150 tons per day, while development work is in progress

with iron gallaries, staircases, etc., is perhaps the most complete and finished mechanical installation in the province of Shantung. A large pile of fresh briquettes on the loading platform bears evidence that the plant has recently been tested out, and when I went through, I found that the machinery was being cleaned and overhauled. As most of the coal from the Fangtze east and west shafts is dust, burning with little or no smoke, it makes an exceptionally good fuel for warships. I was told that an attempt would be made to re-open the briquette plant utilizing this dust coal from the near-by shafts, selling the product to the Japanese Navy.

Both the Fangtze east and west mines send their output by gravity cars to the main Fangtze works, which is used as a storage and railway loading station, thus keeping a constant supply of dust coal to operate the briquette plant at full capacity.



General View of the Fangtze West Mine, opened by the Japanese and now producing about 200 tons per day

VI.—Output of the Fangtze Group

	Lump		Mixed		Bulk		Total (in tons)	
	1918	1919	1918	1919	1918	1919	1918	1919
Fangtze West ...	3,055	—	32,166	68,891	2,166	138	37,381	68,824
„ East ...		—	—	521	1,773	1,352	1,773	1,873
„ South...		—	—	—	190	1,120	190	1,120
Total ...	3,055	—	32,166	69,112	4,123	2,605	39,394	71,817

The 1920 output for the Fangtze west was about 100,000 tons, Fangtze east, about 30,000 tons. At present the production has fallen off, but this is due to the temporary business depression, and to the further fact, that the budget production and allowance for working was exceeded last year, and until the new budget is passed by the Diet, work will be curtailed.

VII.—Fangtze Electric Light Plant

An exceptionally good German electric light plant is found near the Fangtze station of the Shantung Railway, furnishing light to the town. The dynamo is a Siemens Schuchardt 84 kilowatt direct current, belt driven by a cross compound condensing Corliss engine made by Schuchtermann & Kremer.

Poshan Coal Field—the Mines at Tsuchuan

THE valley of Poshan, in which are situated the district towns of Poshan and Tsuchuan is about 20 miles long, and, from a couple of hundred yards at Poshan, nearly 6 miles broad where it joins the North Shantung plain, near Chouts'un. The whole of this valley is a vast bed of coal, situated at a deeper level in the middle and appearing on the surface at the edges, where it has been forced upwards by the pressure against the limestone of the surrounding hills. At the north-west exit of the valley the coal bed is interrupted by a chain of limestone hills; but it commences again and continues in undiminished quantity in a westerly direction, for another 20 miles, between the main range on the south and the Changpaishan on the north. In this valley and its branches are situated the mining centres of Puchi and Puchuan.

South of the narrow gorge at Poshan another valley opens out, in which is situated the Heishan or Black Hill, in contrast to the Hungshan or Red Hill, so called from its ruddy appearance, which lies to the north-east of Tsuchuan, near the entrance of the valley.

The best quality of anthracite coal is found near the surface in the Heishan Valley, and it is on account of this coal that Poshan has been famous. It is principally used in manufacturing coke, which, owing to its lightness, can be transported further by wheelbarrow than the heavier coal. Poshan coke is used at Ch'ingchou-fu, Chouts'un, and at Tsinanfu and was even sold at Kiaochou, a distance of 500 *li*. Unfortunately, the Chinese were unable to cope with the waters in the shafts, and most of the mines were obliged to suspend work. The method of removing the water is extremely primitive. A basket woven of willow twigs is passed from one man to another, and is then emptied into a ditch at the mouth of the coal pit. As the galleries are low and narrow—about 3 to 4 feet in diameter,—the miners are obliged to work in a sitting position, and during the time that water is being removed from the mine other work has to cease. The side galleries are short, and are shored up with millet stalks supported by short wooden props. In a country devoid of timber the cost of shoring up extensive galleries, and, in addition, the difficulty of removing the water, is so considerable that the miners are prevented from going far into a seam of coal. The cost of timber may also account for the small diameter of the galleries, which, if enlarged, would need extra support.

The coal, loaded on low, wooden trucks, with iron wheels manufactured at Chinlingchen from T'iehshan iron, is run along the galleries on wooden ways until the bottom of the main shaft is reached, and is then hoisted by wicker basket attached to a pulley on a framework built over the mouth of the pit, pulled by horses.

The Tsuchuan coal mines, worked by foreign machinery supplied by an English firm, were closed in 1891. In 1898, the machinery having been partially repaired at the Tsinan Arsenal, it was put up by a Cantonese at the foot of the Hungshan, at a place called Nanp'u, and used instead of a pumping apparatus. The native coal pits, being situated at a higher level, were thereby drained of the water which had put a stop to their working. Work was resumed with great vigour, and the Cantonese drew a royalty for keeping the mines dry. The Hungshan surface coal is not as good in quality as that from the Heishan mines, and is not

suitable for coke. The best quality lump costs from 5 to 6 large cash a catty at the mouth of the pit; 2nd quality, about 3 cash; and dust, from 1½ to 2 cash. The transport by wheelbarrow has been calculated at about 12 cents a ton per *li*, and this must necessarily limit the consumption of coal to a very small radius, notwithstanding its low initial cost. At Tsinanfu for instance, a ton costs $20.

The Shantung Mining Company, in the supposition that the superior Heishan coal which crops out at the head of the valley is the continuation of the main coal bed, centered their operations to strike it at a lower level, nearer the main railway line which crosses the entrance of the valley at Changtien, thus reducing the distance of the subsidiary line from the mine to the junction with the main line at Changtien.

The German mining parties concentrated their efforts to locate coal at Weihsien, Poshan, Putsan, Putschi, Tawenkou, Ihsien and Kuetschow and for iron ore at Chinlingchen. The combined results of all the geological researches proved much less than they had been led to expect from the exaggerated Chinese reports. Many stories and legends abounded about the presence of gold, silver and lead and large diamond mines near Yichowfu, which on examination proved to be greatly exaggerated.

The Germans therefore decided to develop the coal fields at once. Coal deposits were located in most of the inlets of the mountain chain bordering on Tsinanfu, Yhsien, Itschou, Kuetschou, Tsingtschoufu, later on, however, these were wholly or partly washed away, and through volcanic influence finally displaced and partly demolished.

It is, however, owing to these same volcanic disturbances that connection was established with the older numerous metallic veins in the mountains, which as already mentioned, are not worth mining, the one exception to these being the large magnetic iron deposit near Chinlingchen of extremely good quality, and in addition a similar deposit, but less valuable on account of the silics contained, in the neighborhood of Yhsien.

On the completion of the general geological researches made, it was decided that following the progress in the building of the railway line, a further special investigation of the remaining mining grounds should be conducted.

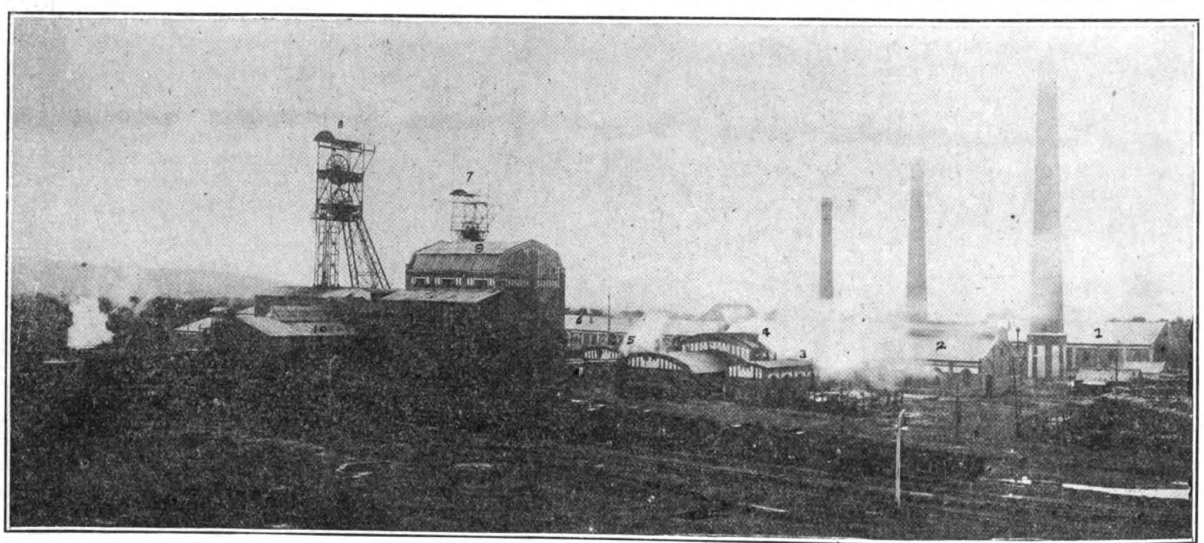
The progress of the railway having made the further special examination of Poshan possible, this was started in the year 1902 and carried on until 1904 when the first shaft was sunk. It was carried down to a depth of 268 metres when it was found there were three strata groups, the first 100 metres underneath the characteristic top layer shows about 16 metres of four single strata of 2½ metres altogether of a really first-class rich coal, having about 17 per cent. gas, and about 8 per cent. ash. The second group, situated about 60 metres from the first, contains three strata in 17 metres, having altogether 1.8 metres coal, likewise of the best quality, but containing on the average 10 per cent. ash and only 15 per cent. gas, which makes the sale of this coal just possible. At a further distance of 100 metres a third group of four strata is found in a extensive mountain layer of about 20 metres, containing 4.2 metres of an anthracite coal having 12 per cent. gas and the same quantity of ash, but of very considerable heating value.

Several of the layers are not worth exploiting. They are, however, cheap to work as they lie between good species of soil, so that the cost in wood is small. In practice the coal is found to be excellent steam coal, and also has the special advantage of being almost smokeless so that it is particularly suitable as a substitute for the expensive Cardiff coal used on warships. Very good hard coke, suitable for oven heating is obtained from the two top strata groups, so that the 40 per cent. of slack from these groups can be turned to most profitable uses. As the coal was found to offer such good advantages, a second shaft was soon made, and was followed by a third shaft with entirely separate mining works, which rendered possible the separation and expedited the mining of the coal apart from the first and second groups. By the end of the year (1913) the total works consisted of the following :—

2 Principal shafts for rich and poor coal, also an emergency shaft built of stone and iron collectively.
1 Coal washer for poor coal
1 Coal washer for rich coal
1 Coal separator with carriage
1 large repair shop
1 Electric shop

The entire works produce the following results in figures :—

1906/07	14,646.05	tons
1907/08	40,899.05	,,
1908/09	72,467.73	,,
1909/10	183,449.84	,,
1910/11	237,544.35	,,
1911/12	283,208.50	,,
1.4.12—31.12.12	299,652.50	,,
1913	414,000.00	,,

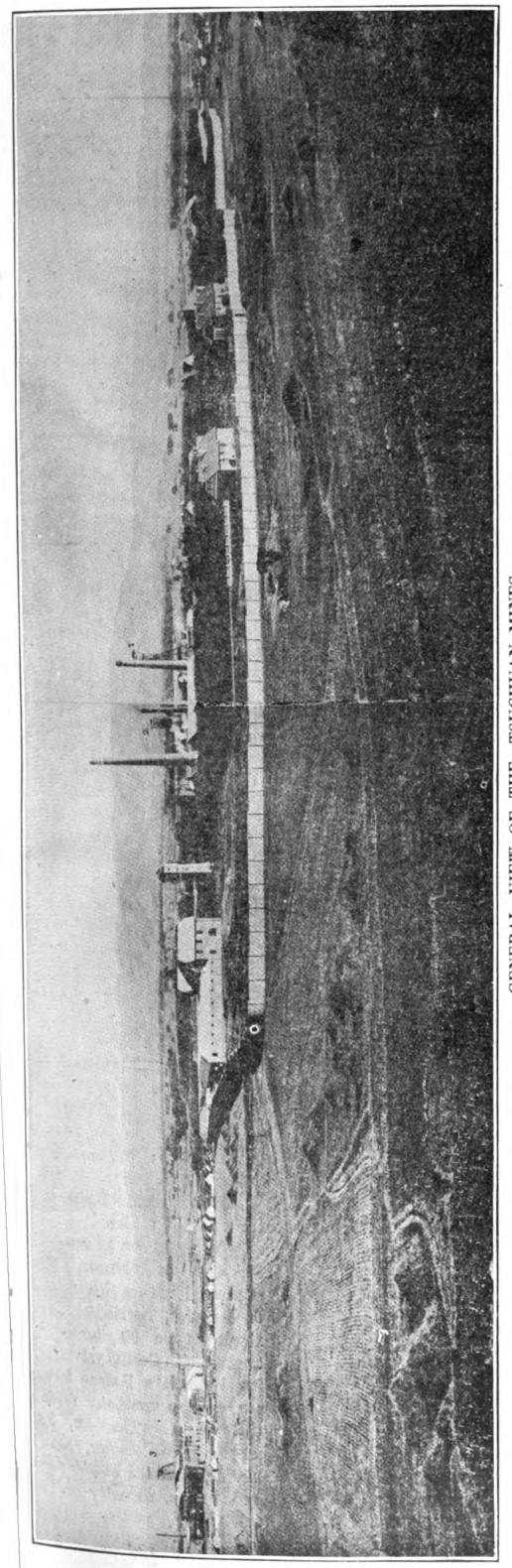


View of the Tsuchuan Coal Mining Plant

(1) Electric Plant; (2) Boiler House; (3) Ventilating Plant; (4) Air Compressor Plant; (5) Hoisting Engine for the Tsuchuan Shaft; (6) Machine Shops; (7) Tsuchuan Shaft Head Gear; (8) Martha Shaft Head Gear; (9) Coal Washing Plant; (10) Loading Department.

MAP OF THE POSHAN COAL DISTRICT, SHOWING MINES BEING WORKED

The total output of these native and other workings is about 700,000 tons per year, which finds a market within the province. Some of this Poshan coal is now being exported to Denmark. Names of companies operating mines marked on the map: 1, Jinsei Company; 2, Mitsui and Company; 3, Fukuryu Company; 4, 5, 6, Kume Gumi, 7, Yanasi Company; 8, Taisho Company; 9, To-a Company; 10, Kantei Company; 11, 12, San To Company; 13, Yamada Company; 14, Shinyei Company; 15, San To Kogyo; 16, Fukuzun Company; 17, Wasei Company; 18, 19, 20, 21, 22, Nakamura Company; 23, Taisho Company; 24, Kasei Company; 25, 26, 27, Nakamura Company; 28, Kumei Gumi; 29, Okura Gumi; 30, Kasho Company; 31, To-a Company; 32, Taisho Company; 33, 34, To-a Company; 35, Kumei Gumi; 36, To-a Company; 37, Nakamura Company; 38, 39, Taisho Company; 40, 41, 42, Taisho Company; 43, Wasei Company; 44, Wasei Company; 45, Chokuyei Company; 46, Okura Gumi; 47, Sakanashi Company; 48, Kasei Company; 49, To-a Company; 50, Kogu Company; 51, Tai-shing Company; 52, Koyu Company; 53, To-ka Company; 54, Santo Company; 55, Taisho Company; 56, Shinyei Company; 57, Santo Company; 58, Tairi Company; 59, To-a Company; 60, 61, Santo Company; 62, Dai Fusan Company; 63, Daisho Company.



GENERAL VIEW OF THE TSUCHUAN MINES

(1) Martha Shaft; (2) Tsuchuan Shaft; (3) This is the 3rd German Shaft which was sunk in 1913 and complete independent mining works were to be installed. The war started before the machinery was ready to be shipped, but the buildings and steel head gear are all complete. This shaft is not being worked.

The following statistics show the use to which the coal has been put in the last few years :—

	Hungshan	Fangtze
In use at the Pit itself ...	27,200 tons	49,200 tons
Wash and gleanings ...	44,000 ,,	20,400 ,,
Local sale at the shaft ...	38,000 ,,	16,200 ,,
Inland sale by rail	110,300 ,,	52,100 ,,
Use on Railway	19,500 ,,	14,500 ,,
Sale in Tsingtau, local sales	10,000 ,,	41,600 ,,
Bunkered and shipped via Tsingtau	165,500 ,,	5,000 ,,
	414,000 tons	199,000 tons

There is an average of about 30 Europeans employed in Hungshan, and about 5,400 Chinese. As the surrounding villages supply plenty of workmen, there is only a home colony for Europeans.

The above official description of the German mines at Tsuchuan or Hungshan, is reprinted from the Shantung number of The Far Eastern Review, November 1914. Since that date, only three Europeans have received permission to visit the mine, previous to the visit of the publisher of The Far Eastern Review, on January 17, 1921. The following information was obtained upon the ground from official records and plans, and allowing for possible minor errors arising from the difficulty of translating technical terms from the Japanese, is accurate and up-to-date. There was no effort made to conceal any part or working of the mine. Everything, even to the records, were open to my scrutiny.

When the Germans withdrew from the Tsuchuan mines at the outbreak of the war, they damaged the machinery, but not the main shafts. It may be said, that with some minor alterations and additions, the original German equipment is complete and in use at the present time. With the stoppage of the pumps, the mines filled with water, and before the Japanese finished repairing the machinery the galleries were completely flooded. It was not until January 1915 that pumping could be commenced. Over 45,000,000 cubic feet of water was pumped out before working could be again resumed in July 1915. During this period, a small amount of coal, or about 300 tons per day, was mined from some of the upper veins, but it was not until May 1916, that all repairs to the machinery were completed, and the output again reached 1,500 tons.

Nature of Deposit.—The coal may be classified into three groups according to the depth of the veins from which they are mined. Down to the 5th vein at 151 meters below the level, the output may be classified as a free burning smoke coal. These veins, however, are not being worked at present. From the 6th vein at 185 meters below the level, to the 9th at 219 meters, the coal is semi-smokeless, while coal from the 10th and 11th veins at 271 meters is smokeless.

The number of veins, their width and depth below the surface, are as follows :—

Vein No. 1.	Width 15 c.m.	Depth below level 105 meters	
,, ,, 2.	,, 40 ,,	,, 125	,,
,, ,, 3.	,, 20 ,,	,, 131	,,
,, ,, 4.	,, 25 ,,	,, 139	,,
,, ,, 5.	,, 40 ,,	,, 151	,,

Note—All output is now being taken from the following veins:—

Vein No. 6.	Width 60 m.c.	Depth below level 185 meters	
,, ,, 7.	,, 30 ,,	,, 199	,,
,, ,, 8.	,, 30 ,,	,, 204	,,
,, ,, 9.	,, 10 ,,	,, 219	,,
,, ,, 10.	,, 2.40 ,,	,, 271	,,
,, ,, 11.	,, 2.40 ,,	,, 273	,,
Total depth reached		275	,,

Size of Deposit.—Total estimated area of coal bearing district, 418 sq. kilometer main deposits extend for about 40 kilometers along the river bed between Poshan and Tsuchuan, with a total estimated area of 186 sq. kilometers. Area proved by Germans, 130 sq. kilometers. Estimated total deposits in area proved by German borings, 800,000,000 tons.

Shafts.—Three shafts have been sunk at Tsuchuan. No. 1, now known as the Tsuchuan shaft was commenced by the Germans

on June 15, 1904 and reached a depth of 268 meters in 1909. This shaft is about 4 meters in diameter. The second shaft retains the name of "Martha" given it by the Germans. It was commenced in 1910 and reached a depth of 275 meters in 1912. This is somewhat larger in diameter than the first shaft, the space for the two cages measuring 2.5 by 3.030 meters. The four deck steel cages are, 91 m. × 3.020 m. the galleries are all laid with light railways, using horses to draw the cars to the shafts.

ELECTRIC PLANT.—The Tsuchuan mine is equipped with an excellent electric light and power plant. The original German plant consists of two alternating sets to which has been added one new Parson's turbo-alternating sets.

The two German sets are made up as follows: *Engine:* Schuchtmann and Kremer; (2) horizontal condensing tandem compound Corliss type. *Cylinders:* H.P. 525 m.m. diameter, L.P. 850 m.m. stroke, 900 m.m. r.p.m. 125; condenser and air pump, jet type double acting, air pump cylinder, 400 m.m. diameter, stroke, 450 m.m. Engine develops 600 horse-power when steam pressure is 8 kgs.

GENERATORS.—(2) A.E.G. direct coupled revolving field 3-phase alternating, 3,000 volts, 100 amperes, capacity 520 K.V.A., speed 125 r.p.m., 50 cycles, 24 pairs of poles. Exciter; direct coupled shunt type 110 v., 114 amperes, 125 r.p.m. 12.5 kw.

1, C. A. Parson's turbo-alternator, 1,000 kilowatts, 3,500 volts, 205 amperes, 3-phase, 50 periods, working at 3,000 r.p.m. This set was made originally by the Mitsubishi Zosen Kaisha, Nagasaki works, for the Hanslim Electric Railway plant at Amagasaki, between Kobe and Osaka, and sold to the Shantung Railway for the mine.

In addition to the three main generating sets, there is a 20 H.P. A.E.G. motor for the boiler plant blower. The switch boards are all of the A.E.G. direct contact panel type; six panels for various purposes. There is an overhead hand power travelling crane, 17 m. span, lifting capacity, 5,000 kgs.

STEAM GENERATORS.—There are two batteries of water-tube boilers, of 150 H.P. each, a total of 600 H.P. The first battery is composed of two Babcock & Wilcox water boilers, with mechanical stokers from the British Underfeed Stoker Co., Ltd. The second battery of two boilers are from Aultman & Taylor of Mansfield, Ohio, and were apparently built originally for the Worcester Mass. Consolidated Street Railway, sold through Thayer & Company of New York. There are two Weir feed pumps.

MAIN BOILER HOUSE.—The boilers for the general steam supply of the mine are installed in two houses. The entire battery consists of 19, three tube Lancashire type boilers, all of German make. Five of the boilers are from the Genekschaft, of Orange, two from Borsig, of Berlin, and twelve from Humboldt at Kalk. The 12 Humbolt boilers are 7-ft. 3-in. × 29-ft. 6⅜-in. with 710 feet of heating surface and 22.76 sq. feet of grate area.

Head Gear of the Martha and Tsuchuan Shafts

HOISTING ENGINES.—TSUCHUAN SHAFT.—The main hoisting engine for this shaft is from the German factory, Gutehoffnung-Shutte, Abt., of Sterkrade, made in 1910. Cylinder, 600 m.m., stroke, 1,000 m.m. 125 r.p.m., lifting 2 tons. Winding drum, 3,000 m.m., width 1,000 m.m. The steel hoisting cage for this shaft is a two deck affair carrying four half ton cars. This shaft is also equipped with an underground hoisting engine for the main incline, with a cylinder diameter of 275 m.m. and 520 m.m. Stroke drum diameter, 2,450 m., width 510 m.m.

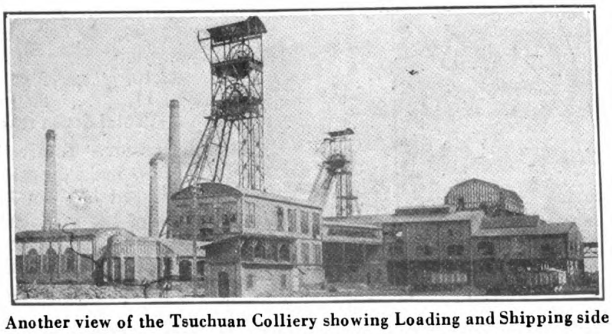
"MARTHA" SHAFT.—The main hoisting engine for this shaft is also from the Gutehoffnung-Shutte, Abt., Sterkrade. It is a horizontal duplex engine with direct coupling Koepos drum, developing 900 horse-power. Steam cylinder 750 m.m., stroke, 1,600 m. Drum diameter, 6,000 m. Maximum speed for winding, 8 meters per second. This engine hoists a four deck steel cage, carrying two half-ton loaded cars to the deck, by a wire rope 165 m.m. diameter, 415 meters long (140,000 kilos breaking strength). The head pulley is 5 meters in diameter.

MATERIAL SHAFT.—The third shaft of the Tsuchuan mine is used for materials, and has a horizontal duplex with two stage gearing single winding engine, 220 m.m., cylinder × 300 m.m. stroke.

AIR COMPRESSION PLANT.—This is a very complete and compact installation from the best German makers. There are four compressors, three being of the Koster type from the works of Pokorny & Wittekind Maschinenbau A.G. of Frankfort a/m, and another larger one with no marks of identification, but possibly from Schuchtermann & Kremer.

The three from Pokorny & Wittekind, are horizontal cross compound straight line direct acting two stage compressors with steam cylinders, H.P. 385 m.m. diameter, L.P. 570, m.m., air cylinders, H.P. 350 m.m. L.P. 555 m.m., stroke, 700 m.m., speed, 130 r.p.m., capacity, suction of free air, 80 cubic meters per minute. The fourth compressor, unidentified, is of a similar type with a H.P. steam cylinder, 450 m.m. in diameter, L.P., 700 m.m., air cylinders, H.P. 405 m.m., L.P. 640 m.m., stroke, 780 m.m., speed, 130 r.p.m., capacity, free air suction, 100 cu. m. per m.

There are two receivers, one 1,625 m. diam × 9,500 m. in length, the other is 1,525 m. diameter × 11,100 m. long.

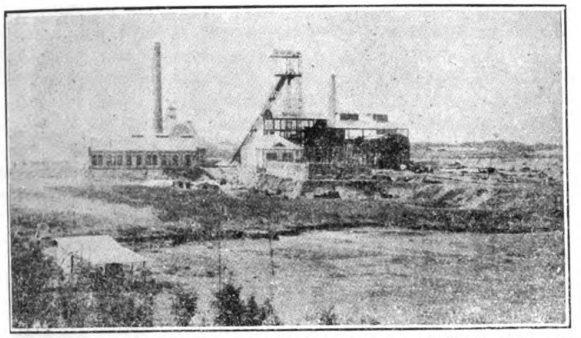


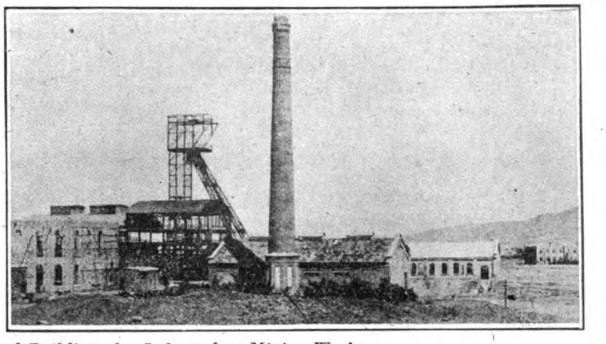
Another view of the Tsuchuan Colliery showing Loading and Shipping side

VENTILATOR PLANT.—This is also a German plant, equipped with a Schuchtmann & Kremer, horizontal duplex single type 90 horse-power engine with Corliss valves, driving by belt a Rateau forward curve vane ventilator made at the works. The fan, 2,400 meters in diameter, has 20 blades, operates at 250 r.p.m., and has a capacity of 3,000 cubic meters per minute.

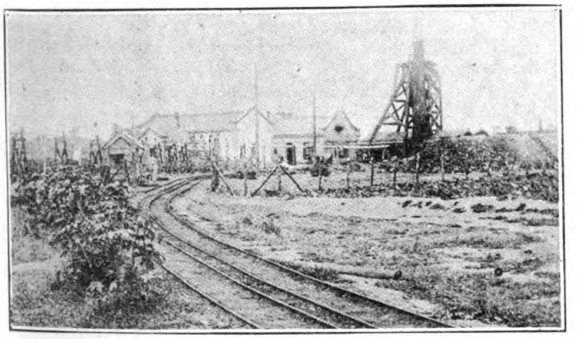
COAL WASHING PLANT.—This is of the Humboldt type

VIEWS OF THE TSUCHUAN COLLIERY

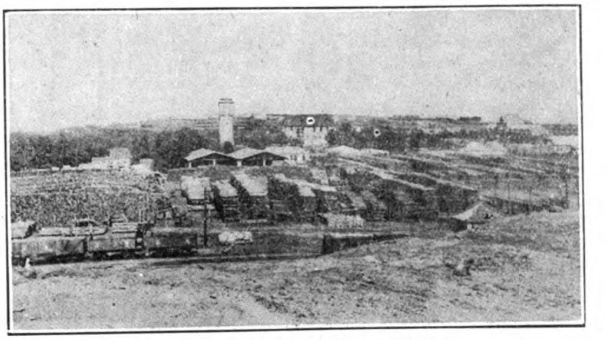




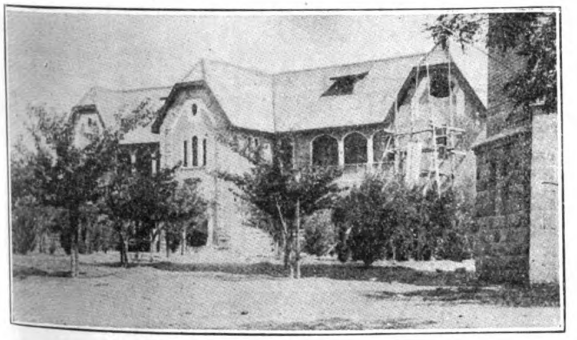
Views of the Third German Shaft with completed Buildings for Independent Mining Works



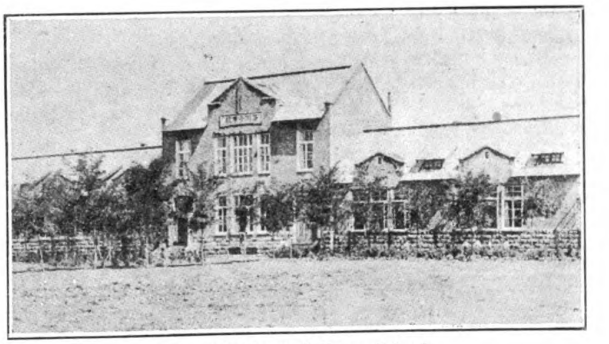
The Branch Mine at Shilichuang, where the German Machinery from the Fangtze Mine has been Installed



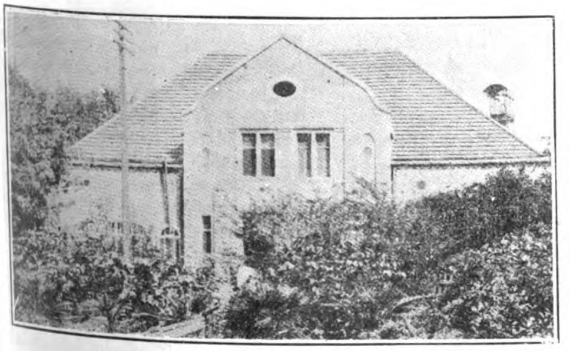
Material Yard of the Tsuchuan Colliery



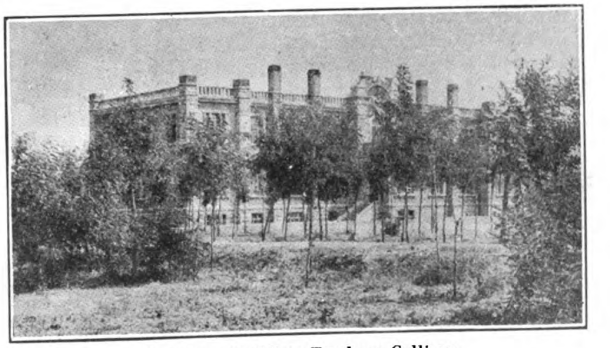
The Tsuchuan Colliery Hospital



The Tsuchuan Colliery School



Tsuchuan Colliery Administration Building



Dormitory Building, Tsuchuan Colliery

with a capacity of 70 tons per hour, but at present is turning out about 300 tons per day.

COAL SEPARATOR AND CONVEYORS.—The cars from both the Martha and Tsuchuan shafts are unloaded on the same boiler plate floor, and dumped into the bins passing through the screens and sorting conveyor and discharged direct from the shutes into the railway cars for shipment.

MACHINE SHOP AND FOUNDRY.—A fair size machine shop and foundry for general repairs is also a part of the equipment. The foundry has a cupula with one ton capacity. The machine shop is well equipped with an assortment of machine tools from all countries. I saw a Brown & Sharp milling machine, Japanese lathes from the Tsukomoto, Ikegai, Niigata, and Adachi Iron Works, a Japanese-made planer of American model supplied by the Mitsui Bussan Kaisha, three or four of the original German drilling and planing machines from the Saechs Maschinen Fabrik of Chemnitz and several smaller American tools, furnished by the Horne Company of Tokyo.

In addition there is a punching and shearing machine, drop hammer and steam hammer. The shops seem to be kept busy, especially with the all steel coal cars, over 4,000 of which are used underground. The wheels of these cars are all cast in the foundry and finished in the adjoining shop. Boiler, pump and other general repairs apparently keep this little shop taxed to its utmost capacity.

PUMPING EQUIPMENT.—I was unable to visit the underground workings and see the equipment at work. There are two Worthington duplex double acting pumps, with 12-in. steam cylinders, 10-in. stroke, and 7-in. water cylinder, suction pipe, 6-in., delivery 5-in., with a capacity of 245 to 450 gallons per minute at a 300-foot delivery head. The mine is equipped with eight electric and five steam pumps, a total of 13. Some of these are motor-driven turbine sets from the Okumura Electric Works of Japan.

The mine timbers are all imported from Japan.

WORKMEN.—About 4,000 Chinese miners are employed at present working in shifts of eight hours. They are paid 60 copper cash or about 40 cents silver, at normal exchange about 20 cents gold. Over 500 Chinese mechanics of all kinds are employed above ground. There are 250 Japanese employees of all classes, and with their families living at the mine, total 600.

The mine is under the general direction of the Shantung railway administration, and managed by Mr. S. Handa, of the government service. The assistant engineer is Mr. K. Fujita.

OUTPUT.—The average output is 1,500 tons per day, but this has fallen off at present to about 1,200 tons. The total output during the German management is estimated at 2,000,000 tons. The output under Japanese management is as follows:

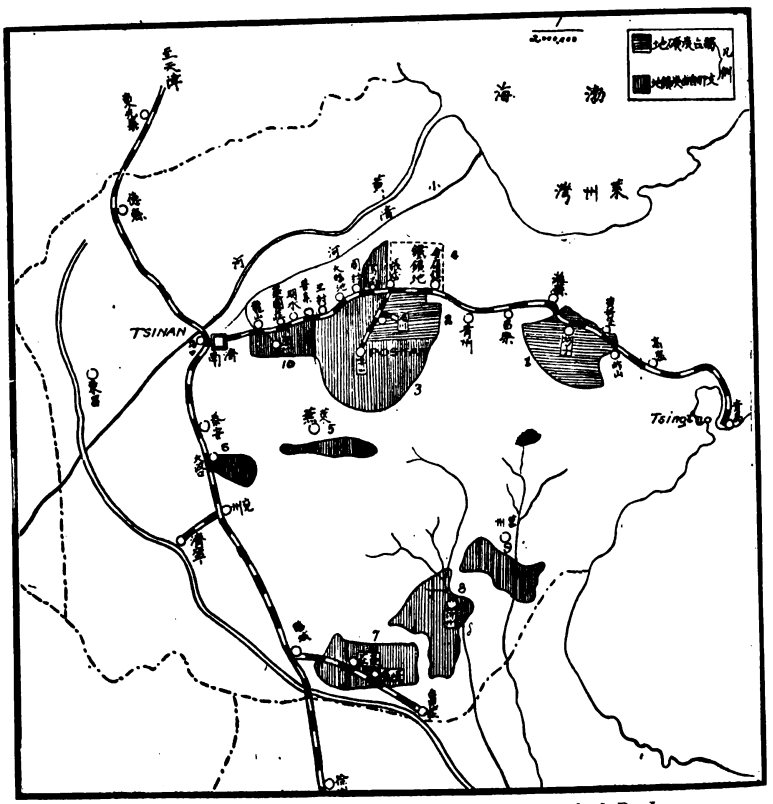
Year	Lump	Washed	Mixed	Dust	Other	Total
1916... ...	68,260	83,299	56,457	202,391	47,530	458,437
1917... ...	74,145	81,210	59,035	203,828	39,326	457,544
1918... ...	59,440	70,050	48,076	199,620	28,254	405,440
1919... ...	76,051	66,764	52,513	230,101	21,465	446,894
Nov. 1920	—	—	—	—	—	504,250

Total output under Japanese management ... Tons 2,272,565

Distribution

Year	Sold in Province	Value	Exported	Value	Bunker	Value	Total	Value
1919...	122,474	693,101	67,799	329,545	905	5,418	191,180	1,028,064
1920...	199,359	1,033,647	170,054	901,123	12,433	89,514	377,846	2,024,284

Average price for 1919, Yen 5.38 per ton; 1920, Yen 5.36.



Map of The Shantung Coal Measures Showing Areas Worked By Japanese and Chinese

(1) The Fangtze Field; (2) Tsuchuan Field; (3) Poshan Field; (4) Chinlingcheng Iron Deposits; (5) Li-wu Field; (6) Tawenko Field; (7) Yhsien Field (8) Ichow Field; (9) Chinchow Field; (10) Wen Tsu-chen Field. Worked by Japanese; Worked by Chinese

Most the coal exported is of the smokeless variety and sold to the Japanese Navy.

ANALYSIS.—Made at the technical laboratory of the South Manchuria Railway in August 1915.

Vein	Water	Volatile Oil	Solid Carbon	Ash	Color of Ash	Nitrogen	Sulphur	Calories
A	0.81	8.41	72.01	18.77	light pink...	0.861	1.18	7,333
B	0.82	15.99	71.45	11.74	,, ,, ...	1.329	0.90	8,060
C	0.87	12.66	75.57	10.90	,, ,, ...	1.209	1.17	7,657
D	0.82	12.72	80.99	5.47	light yellow	1.178	0.59	8,153
d	0.74	14.66	77.83	6.77	soiled white	1.178	0.83	8,525
E	0.88	13.47	68.16	17.47	,, ,,	0.847	0.89	7,471
F	0.97	13.75	77.97	7.31	white... ...	1.360	1.19	7,510
No Name ...	2.99	5.75	80.98	10.28	light pink...	1.391	2.77	7,006
G.H. 1...	0.84	9.94	84.30	4.92	grey	1.270	1.31	7,440
G.H. 2...	1.23	9.31	83.03	6.43	brown ...	1.178	2.65	7,657
G.H. 3...	1.24	10.45	84.29	4.02	light pink...	1.267	1.57	7,347
I	0.68	10.72	81.49	7.11	soiled white	—	0.56	6,758

TRANSPORT.—Coal from the Tsuchuan mines is carried by the Shantung railway to the port or other distributing points along the line. From the colliery to Tsuchuan station is four miles, from Tsuchuan to Changtien eleven miles and 176 miles to Tsingtau. The present equipment of the railway detailed elsewhere in this number of THE FAR EASTERN REVIEW, embraces 708 coal cars of which about 563 are of 15 tons capacity, the balance of 30 tons each. In addition there are 75 coke cars of 15 tons capacity each for handling the output of the mines. With the increased output of the iron mines added to the collieries, the railway management states that at least 300 thirty-ton cars and 24 more locomotives will be required to deal with the traffic.

FREIGHT CHARGES.—As the railway administration owns and operates the coal mines the output of the Tsuchuan collieries are carried free over the line, while the freight on coal from the Chinese-

owned mines in this district to the port at Tsingtau is silver Yen 61.70 per 15-ton car, less 50 per cent. rebate. This undoubtedly gives the railway a great advantage in being able to set the price for local, export or bunker sales.

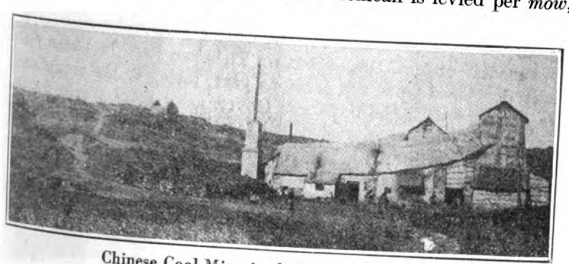
THE THIRD GERMAN SHAFT.—This shaft referred to the original report, with its entirely separate mining works was originally sunk for ventilating purposes. It is located about half-a-mile from the main works and alongside the branch railway that connects the mines with the main branch at Tsuchuan. In 1913, the Germans continued this shaft down to 217 meters and commenced the erection of the new and independent mining works, but before their completion, war broke out. I did not visit this shaft, as I was told that it had no equipment, and had never been used. The headgear, steel buildings, power houses and loading stations, with railroad connections, etc., however, were all completed by the Germans, ready for the machinery when they abandoned Tsuchuan in November, 1914.

TSUCHUAN BRANCH MINES.—In addition to the main mine, the Japanese are developing others located about two to three miles distant. The most important of these is the one at Shilichuang, which has been equipped with machinery taken from the first German Fangtze mine. I was told in Tsingtau that the Fangtze machinery had been dismantled and sent to the Chinglingchen iron mines. This is an error. About 500 tons per day are now being taken from the Shilichuang pit, and the Japanese expect to increase this materially in the future. Another new mine is being developed not far from Shilichuang, at a place called Kunlung. Work on the shafts and upper stratas is being carried on, but as yet, it has not reached the producing stage.

THE LESSER COAL MINES.—The mines in the immediate neighborhood of Poshan have been worked by native methods since the time of the ming dynasty. The opening of the average Chinese pit is about 3×6-ft. and 50-ft. deep, lined with stone or bricks. Hand winches operated by man or animal power are used to haul up the baskets of coal and to drain the mine in the same way. Some of the native mines are equipped with old-fashioned steam engines for hoisting.

There are over 200 of these small pits worked by native methods, producing an aggregate of 700,000 tons annually, or some 2,000 tons per day. Some of these mines are now being operated by Japanese interests. The map of the district shows the location of 65 of these Japanese enterprises. The life of these small mines is two to three years for the small veins and eight to nine for the larger ones. Most of the smaller mines are closed in summer owing the difficulty in keeping them properly drained.

The capital employed for these enterprises runs from fifty to 3,000 Mexican dollars. A tax of .30 Mexican is levied per *mow*,

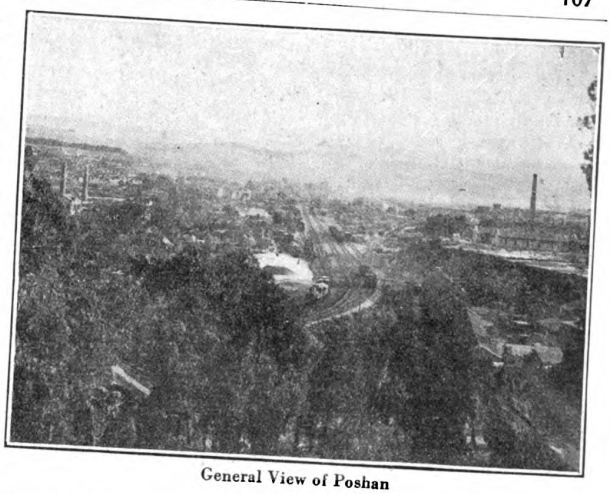


Chinese Coal Mine in the Poshan District

and one and a half per cent. of the output, payable either in money or coal.

Roads in the district are exceedingly bad, and all transportation is by wheelbarrows or donkeys. Of the total output of the Poshan mines, about one-third is transported by the railway.

COKE.—About 150,000 to 200,000 tons of coke are made in Poshan, about half of which finds its outlet over the railway. Some Japanese firms, such as the To-wa Company, Nakamura



General View of Poshan

Company and the I-Sho yoko have gone into the coke business on a considerable scale.

ANALYSIS OF POSHAN COAL.—An analysis of small and large Poshan coal made by the laboratory office at Tsingtau, gives the following:—

	Small Coal	Large Coal	Lump	Unscreened
Water ...	0.58	0.54	0.40	0.49
Volatility ...	9.29	11.25	12.17	16.52
Ash ...	8.39	8.06	4.80	5.50
Sulphur ...	4.97	6.65	—	—
Solid Carbon	81.74	80.69	82.63	77.49
Cokes ...	90.13	88.75	—	—
Calories ...	8,476	8,316	7.874	7.970

The Chinglingchen Iron Mines

The following notes on these mines are reprinted from the Shantung number of THE FAR EASTERN REVIEW, November 1914:—

In the mountain range which rises in a northerly direction of about 280 and 300 kilometers from the Shantung railway, are to be found large quantities of iron ore in contact with diorite and chalk.

At Tiehshan the iron ore is easily traced by the remains of old mining works; there are still blocks of pure magnet iron ore, which the old miners had not the skill to work; the whole is opened up by shafts, galleries and bore holes. The hanging part is of very hard crystalline chalk, and the lower part of quarz augitdiorite. The iron stone continues regularly throughout except for trifling interruptions, and is only adulterated in the lower part with sulphur pyrites.

An average trial of the ore taken from a mass of 3,000 tons out of Gallery 1 showed conclusively:—

65.42 Fe Spur As
0.42 Mn ,, Sn
0.03 P 2.00 Si_2 O_3
0.08 S 0.8 CaO
0.09 Gu 0.5 MgO.

At Sypauschen where the ore is found there are not only clear traces of old mines to be seen, but also remains of an old foundry. This ore in particular contains the highest proportion of iron (66.4%) 2.8 per cent. residue, 0.02% S. and traces of phosphor. The ore is therefore the purest iron ore which can be obtained anywhere.

The ascertained supply of ore amounts all together to 49,100,100 tons, more than 20,000,000 tons of which lies in such a position that it can be worked easily and cheaply. This, of course, does not exhaust the supply by any means. The authenticated amount

of raw iron still remaining amounts to more than 30,000,000 tons.

Now that the preparatory work has been accomplished in opening up sufficient ore, and it has been proved that good coke can be obtained suitable for heating purposes in the neighborhood of the Hungshan mine, it has been decided that iron works shall be erected at Tsangkou, with a preliminary two ovens with a daily output each of 130-150 tons. The preparatory work will be expedited to allow of mining being commenced in 1915.

The Germans could not carry out their intention to erect the iron works at Tsangkao, owing to the war. The Japanese have been working and developing the mines, sending the output to the Government Steel Works, at Yawata in Kyushu. The following information will bring the data on this mine up-to-date.

The Chinlingchen Iron Mines are located on the Lintze district of Shantung at Chang Pu Chuang, about four miles north of Chinlingchen station on the Shantung Railway, 170 miles from Tsingtau. They are connected with the main line by a branch that terminates at Chungpu.

ORE DEPOSITS.—The ore deposits at Chinlingchen extend for 10 miles along the north side of the Shantung Railway and cover an area of about 170 square miles. The deposits consist mainly of Magnetite Fe 30_4 with a small proportion of Hematite Fe_3. The following is an analysis made at the Japanese Government Steel Works at Yawata of two recent shipments:—

(1) HEMATITE Fe 20_3:

Original weight	1,821.710	tons
Moisture	41.210	,,
Net weight	1,780.500	,,
Iron	63.58	per cent.
Water	2.10	,,
Manganese	0.22	,,
Silicic Acid	4.94	,,
Sulphur	0.10	,,
Phosphorus	0.05	,,
Copper	0.252	,,

(2) MAGNETITE Fe 30_4

Original weight	4,171.120	tons
Moisture	90.470	,,
Net weight	4,080.65	,,
Iron	56.00	per cent.
Water	1.41	,,
Manganese	0.16	,,
Silicic Acid	9.95	,,
Sulphur	0.858	,,
Phosphorus	0.098	,,
Copper	0.221	,,

The following analysis is by the Chinese government bureau of mines at Peking:—

	Total Fe	Fe_2O_3	Fe O	Mn	Cu	Sio_2	P.	S.	Moist
Outcrop ...	...67.08	81.57	11.94	0.08	0.134	1.16	0.024	0.014	2.87
Underground...	61.24	61.18	23.22	0.07	0.054	5.74	0.037	0.105	1.18

The estimate of the amount of ore in the deposits varies greatly. The original German estimate was in excess of 100,000,000 tons. Chinese engineers estimate it about 50,000,000 tons, while a preliminary Japanese survey was as follows:

Fenghuangshan.—Length of vein, 2.5 miles, thickness, 30 feet, survey not completed. Location on north side of hill.

Tiehshan.—Length of vein, 1.4 miles, thickness 40 feet. Deposit, 11,000,000 tons above level of plain, 13,000,000 below level. Location, north side of hill

Yuhuangshan.—Length of vein, 3.4 miles, thickness, 80 feet. Deposit, 63,000,000 tons. Location, north side of hill.

Ssupooshan.—Length of vein, 1.5 miles, thickness, 22 feet. Deposit, 17,000,000 tons above level of plain. Location, south end of hill.

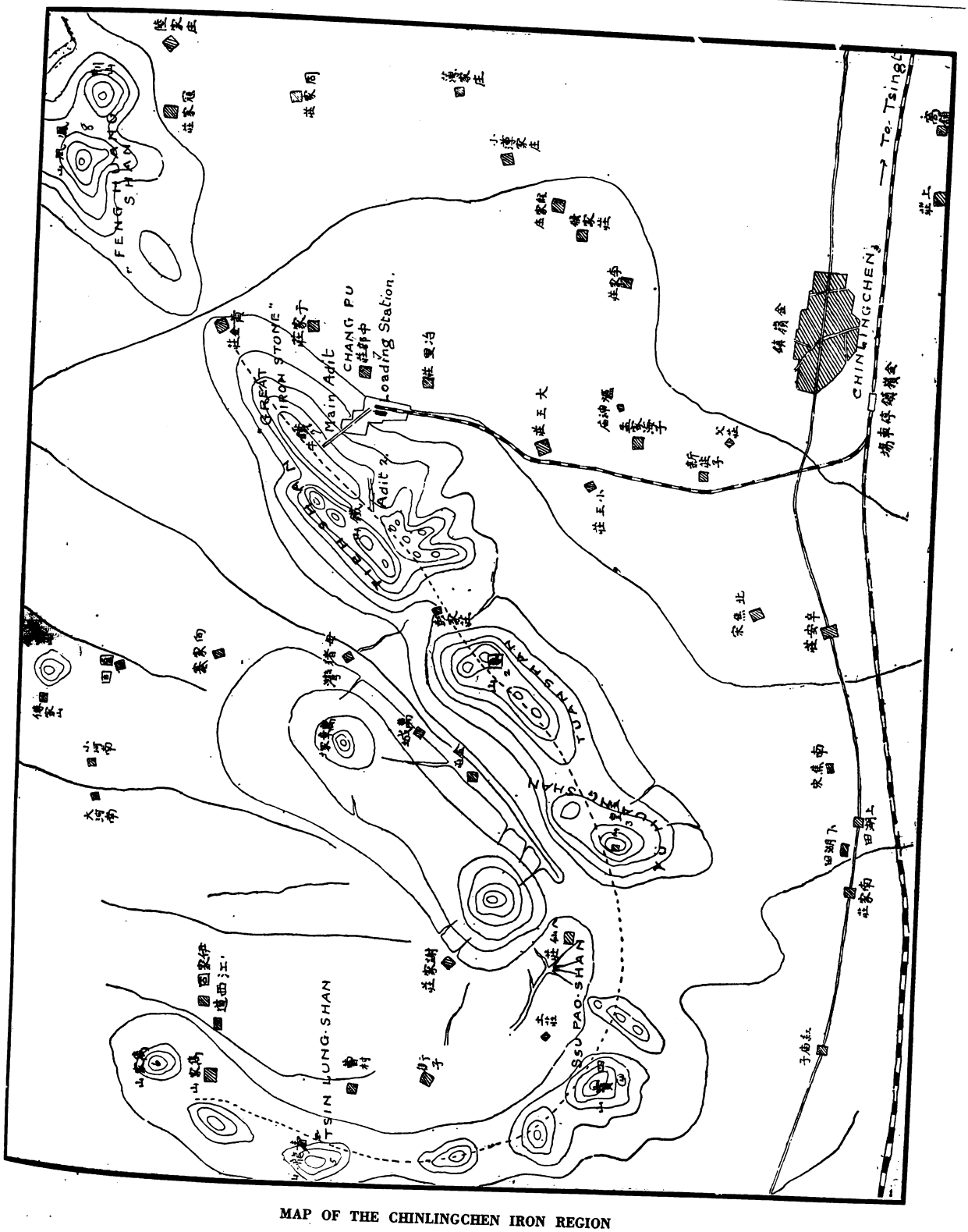
Huge Iron Outcroppings on Tiehshan at Chinlingchen Mines. Old Chinese shafts are seen in the picture on the Right

The Japanese estimate of the ore is therefore in excess of 100,000,000 tons, bearing out the German estimate.

Mr. N. Senju, the Japanese engineer in charge of the mines, informed me that they had not yet completed the surveys and estimates for the entire field, confining their explorations exclusively to the deposits on Tiehshan, where they had 6,000,000 tons blocked out. No work was being done on the other deposits, and as a matter of fact, the output on Tiehshan itself had been materially decreased from the previous year, owing to the reduction in the contract with the Japanese Government Steel Works for this year. Last year's contract called for the delivery of 200,000 tons f.o.b. Tsingtau, but owing to the decreased demand, and falling off in price, the contract for the current year had been cut to 100,000 tons. The production at one period during last year reached 1,000 tons per day, but this had fallen off to the present output of about 200 tons.

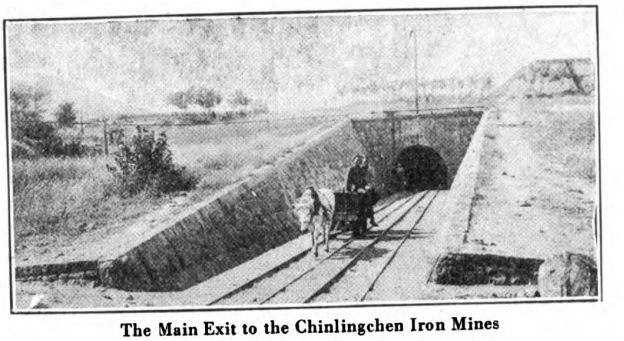
The Chinglingchen mines have been surface worked for several centuries by the Chinese, and abandoned as the vein dipped below the surface. Their exploitation was being undertaken seriously by the Germans when the war broke in 1914. They began operations at Tiehshan by starting a 1,200-foot adit towards the main ore body. When compelled to withdraw on the landing of the Japanese army, the Germans had completed about 600 feet.

The Japanese began work in October 1916, and by the end of 1917, reached an ore vein from 6 to 12 feet thick. This, however, was considered as an accidental exposure, so a smaller adit was excavated and at 300 feet another 40-foot vein was reached. Several



MAP OF THE CHINLINGCHEN IRON REGION

Ore Bins and Loading Station at the Chinlingchen Iron Mines



The Main Exit to the Chinlingchen Iron Mines

cross cuts have been made from the main adit, and by means of two open cuts from the top, the vein has been exposed in other places.

The Japanese have made no attempt to exploit the mine on a grand scale, as is generally supposed, nor have they equipped it with any new machinery. The story is generally accepted that the machinery from the German Fangtze mine had been dismantled and shipped to Chinglingchen. This is erroneous. Such machinery as was taken from Fangtze was installed at a branch of the Tsuchuan Coal Mine. There is no need as yet of any hoisting machinery at Chinglingchen, as the filled ore cars are operated by gravity from the adits to the storage bins, and the empties are hauled back by mules. The only machinery at the mine is the old boiler plant equipped with Lancashire boilers, and the original German air compressor, a high class machine of the Koster patent made by Neuman & Esser, of Aachen. It is not in use. There are the necessary small blacksmith and repair shops, and residences for Japanese employees. As all the Chinese laborers live in the nearby village, no quarters for them have been provided at the mine. The one important mechanical improvement made by the Japanese is the ore bins and loading station, built near the main adit, from which several fifteen-ton cars can be loaded in five minutes.

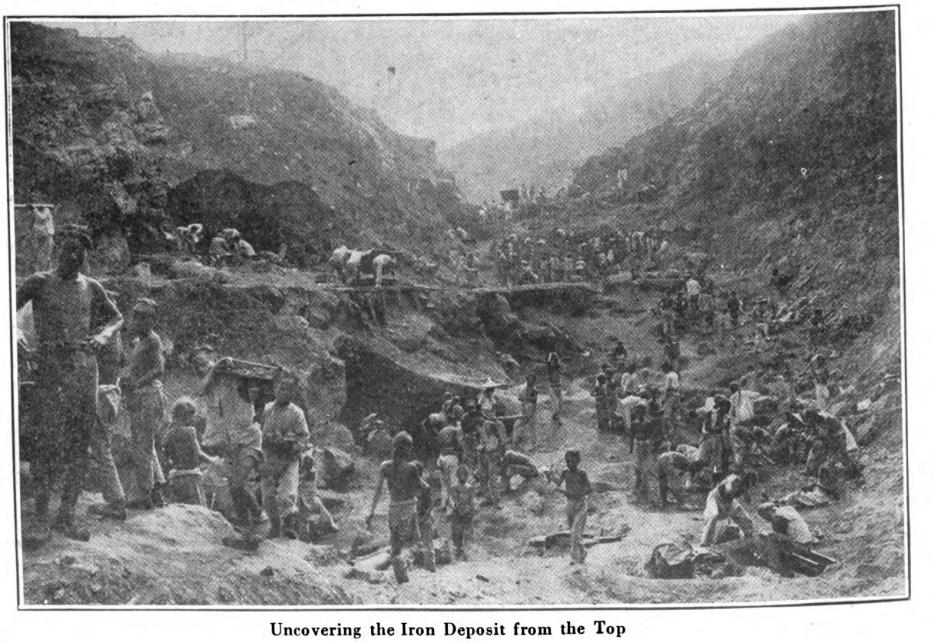
When producing its maximum, the staff consists of a Japanese manager, about 30 Japanese engineers and foremen on the surface workings, with 20 Japanese underground and 1,200 Chinese coolies. At present about 500 Chinese laborers are employed. In addition, there are about 40 Japanese soldiers for police duty. The miners work on contract, and are paid at the rate of silver Yen 1.40 to 1.50 per square meter of ore mined, all tools, dynamite, etc., being supplied by the management. Laborers not under contract are paid 40 cents silver a day.

OUTPUT.—The output for the year ending March 1918 is given as follows :

Magnetite ore ...	78,288 tons
Hemitite ore ...	63,965 ,,
	142,253 tons

	Free Supply	Exported	Value Yen	Av. Value Per ton
1919	219,677	28,340	204,502	7.22
1920	191,459	144,859	957,406	6.61

Japanese Hospital at Changtien



Uncovering the Iron Deposit from the Top

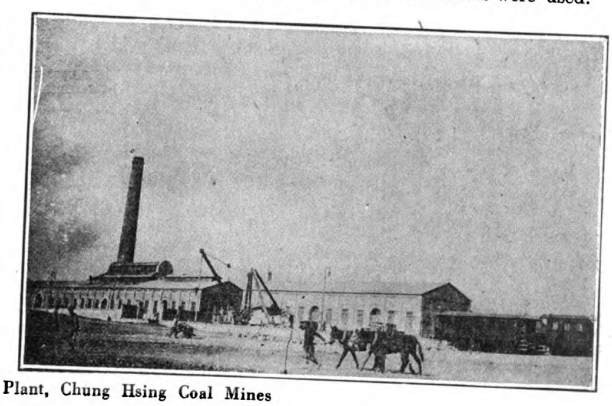
The Chung Hsing Coal Mines

THE Ichow coal field, about 15 kilometers south-west of Ichowfu is the most extensive in Shantung province, covering 6,500 square kilometers. The concession was owned by the Prefect of Ichowfu. During recent years mining has been started in five places, all in primitive Chinese fashion. Some 50 pits are being worked, at a depth of about 35 metres and a width of 1.5 metres. The coal is raised by gins and animals, and is good for cooking purposes. The output is estimated at about 30,000 tons annually.

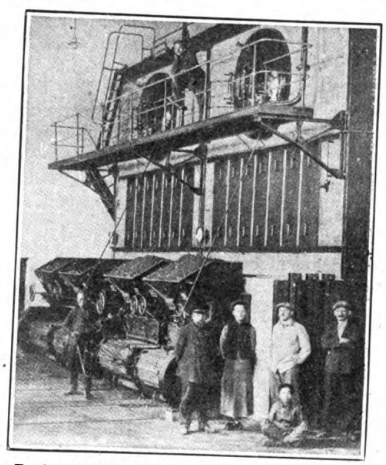
The Yihsien coal-field is considered by far the best in Shantung as regards stratification of the layers, thickness of the seams, and quality of the coal. Besides coal, there is also iron ore of good quality, but not yet worked. The coal-field is in a mould 30 kilometres long and 8 kilometres deep, the upper seam has a thickness of from 2.5 to 10 metres, and the lower, from 0.8 to 1.12 metres. Beyond the mould the field is reported to extend some 10 kilometres in a westerly direction, to near the Tientsin-Pukow Railway, which has built a branch line to Tsaochwang, and has contracted for 60,000 tons of coal annually. Some 60,000 tons are being coked annually. The Yihsien coal-field belongs to the Chung Hsing Mining Company, which was started in the year 1880. In 1898 the company was transformed into a German-Chinese company, and was granted a concession for mining with machinery, a field 100 *li* in circumference, and for a railway from the mine to the Grand Canal. In 1908 the two German shareholders were bought out, and the company, which until then had worked with a capital of Taels 800,000, became again a purely Chinese limited liability company, with a capital of Taels 2,200,000, of which the provincial government holds Taels 100,000.

The capital of the concern was again increased to Taels 3,500,000. The company operates eight shafts and has just equipped its newest shaft with modern machinery. When this shaft is in full working order 2,000 tons of coal a day can be taken from it, but at present it yields but 500 tons a day.

The machinery for this mine was supplied entirely by German manufacturers, who advanced a loan of 80,000 marks (about $19,000) to the company in connection with the installation of the machinery. The plant includes 10 boilers, pumps, elevators, electric machinery, and cars. The company operates 27 miles of railway in connection with the mine, and for the construction and equipment of this railway German capital and materials were used.



General Views of the Principal Plant, Chung Hsing Coal Mines



Boiler Room of Chung Hsing Coal Mines

General View of Yihsien Coal Fields

Previous to the construction of the Tientsin-Pukow Railway, the company's products were shipped via the Grand Canal, but now practically all of its coal is shipped over this railroad. The company states that shipping over the canal costs 3 cents Mexican a ton-mile, while shipping over the railroad costs but 2 cents. The coal, which sells at the mine for $2.25 gold a ton, is bituminous and is said to rank with Kaiping coal. The company claims a total of 4,000 tons a day capacity, and besides makes large quantities of coke.

The chief engineer and the first assistant of this company are Cantonese trained at Tongshan in Chihli. They have had no foreign assistance in the construction and operation of the company's plant. The chief engineer receives $120 gold a month and his assistant one-half this sum. All of the labor in the mine is on a contract basis, the native miner making an average daily wage of about 10 cents gold. There are about 800 men employed on the company's premises. The Tientsin-Pukow Railway has constructed a branch line from Lincheng to Yihsien, where it connects with the railway owned by the mining company, thus providing a through rail outlet to the market for their coal.

old friends and neighbors should be stronger and the intimacy closer than with new acquaintances and guests coming from distant parts. Thus, it is not surprising that the ever intimate friendship between China and Japan has not been seriously affected by the Chinese-Japanese war. This was proved by the fact that the people of China whole-heartedly supported their Japanese neighbors during the Russo-Japanese war. While nominally neutral as a nation, the people showed their natural feelings by cheering each Japanese victory. Our people have never sought the injury of Japan.

"Yet, to our regret, we have seen the serious decline of this ancient friendship between two neighboring peoples. Observing Japan's growing national prestige, an anti-Japanese feeling has grown apace in China, because of disappointment. In his recent speech to the Japanese Diet, the premier of Japan stated that the Japanese government appreciates the importance of strengthening Chinese-Japanese friendship, that his government is bending efforts to that end and that anti-Japanese feeling in China has not resulted solely from Japan's policy in China. We will not dwell upon the cause of this anti-Japanese feeling, whether it has resulted from Japan's policy or acts, or from other causes. So long as the Japanese government appreciates the vital importance of preserving Chinese friendship differences and difficulties can be removed, and the ancient accord restored. We Chinese will readily welcome real Japanese friendship; but permit me to say that friendship rests in deeds and not in mere words, in sincerity and not in formality. I sincerely hope that for the future intimate friendship between Japan and China will be manifested by the people of the two countries in practical application and will not be confined to polite exchanges between publicists and diplomats. As we are tradesmen, I will say within the scope of a tradesman that business cannot last a day or even a minute without honesty and sincerity. I shall lay upon myself the burden of bearing my own part of this word, sincerity; and I hope you gentlemen of our sister country will do the same."

That is one of the best speeches delivered for many a long day in China. Is it not a model of politeness and plain truth? The Japanese merchants and officials in China will do well to take it to heart and to whisper it—not too softly—to a general or colonel or two across the Sea of Japan. Japan can have the friendship of China, but only by paying for it in the only coin that purchases friendship—the golden currency of honest, friendly acts.

* * *

Korea's Economic Prospects

SELDOM, is it, that anything wholesome or truthful about Korean conditions appears in the Shanghai press, where rampant antagonism to anything and everything Japanese points each moral and adorns every tale. It is, therefore, with pleasure that we reproduce the following timely editorial under the above caption printed in the go-ahead Shanghai *Times* on January 28:—

In one way or another of late we have been hearing so much regarding discontent surging in Korea that it is a positive relief to read of something much more pleasing and, incidentally, much more accurate regarding that country, which the impartial testimony of those competent to judge proves convincingly is infinitely better to-day under the guidance of the Japanese than has ever been the case in the history of Korea. An article in a recent issue of "The Far East Commercial Supplement" makes this abundantly clear. In this article, from the pen of Mr. S. Minobe, governor of the Bank of Chosen, we have facts and figures presented in a careful manner which plainly show that the economic development of Korea during the past decade, namely, since the annexation of the country by the Japanese, has been truly wonderful, creditable alike to the Japanese and all to the good of the Koreans themselves. We find that during the period mentioned the commercial prosperity of the country as revealed in its imports and exports has increased no less than sevenfold. In 1910 the value of Korea's exports was Y.29,113,581, imports Y.41,658,876, a total of Y.70,772,357, while in 1919 the total value had expanded to no less a sum than Y.506,507,832. These figures are eloquent of what the country is capable of doing when guided in the proper direction, and they augur well for Korea's future prosperity. They are also infinitely more convincing regarding Japan's treatment of the Koreans than the many loose and obviously prejudiced statements that one hears and reads so often regarding the country. Korea has a great future. Even to-day she is still very largely an agricultural country, as her manufactures are still in the incipient stage. Korea, as is pointed out in the article above referred to, is ideally situated as a commercial country, and in consequence its trade can be extended in many directions, with Japan to the east, Manchuria and Siberia to the north and China to the west. To this geographical advantage can now be added its excellent communication services and banking facilities. Best of all is the undoubted fact that, despite the croaking of the malcontents and the loose statements of the prejudiced, the commercial ties are growing more intimate year by year between the Japanese and the Koreans and are proving one of the best agencies to bring about the much-desired sympathy and goodwill between the two countries now so closely united. As Mr. Minobe says "Common business interests will do what other interests may fail to do," and he very truly adds that "the economic development of the country is most desirable for this as for any other reason."

Even in agriculture, in which the Koreans have been engaged from time immemorial, there is, despite the excellent work of irrigation and reclamation that has been done during the past ten years, plenty of room for further development. There is also a specially bright future for the silk industry. Indeed progress in this direction has been so rapid that Korea, along with Japan proper, may yet rank among the chief silk-producing countries of the world. In the mining of iron and coal very considerable progress is to be noted. Probably the chief factor that has contributed to the very satisfactory development to which we have referred is the laying of the railways, which has been most effective and far-reaching in its results, and what has been done in this direction will, we have no doubt, be surpassed in the near future.

Altogether the economic development of Korea is progressing most satisfactorily and that the country is in good hands and is moving in the right direction is evident from the facts and figures above mentioned. They are much more convincing than all the claptrap of the discontented and the indiscrimination shown by the prejudiced.

The newspaper that publishes the pleasant truth is believed and respected when it resorts to friendly criticism. In this imperfect world, no nation or person is perfect. We have all much to learn, to do and to undo. Japan carries a heavy cross in Korea. Only a policy of prudence and patience and kindliness towards the Koreans will ever wipe out the black smudge of the "abdication" era. To fair-minded, practical people who know the sins as well as the sorrows of the Koreans, Japan's original errors seem to offer no good reason why we should unite in making her burden heavier, her task more difficult and the future of Korea more indefinite or more dangerous.

* * *

The Chinese Rolling-Stock Loan

THE Chinese ministry of communications has arranged with a group of 27 Chinese banks for a loan of $6,000,000 at 8 per cent. for the purchase of rolling-stock for the Chinese government railways. The terms are as follows:—

I. The ministry of communications will issue a loan for the purchase of railway cars and locomotives, known as "The 8% Short-term Railway Car Loan of the Ministry of Communications." II. The total amount of the loan shall be $6,000,000, Peking currency. III. The bonds of the loan are to be in three denominations, namely, $10,000, $1,000 and $100. The bonds shall not be registered. IV. The bonds shall bear interest at the rate of eight per cent. per annum, payable on the 30th June and 31st December of each year. V. In addition to the yearly interest, these bonds will be entitled to a bonus of two per-cent. of the unpaid profits of the Peking-Hankow Railway as shown in the annual general statement of accounts of the said line. The bonus shall be issued on the 31st December of each year when the interest payment is made. VI. The principal and interest of the bonds shall be secured by the cars and locomotives purchased and also by such an amount of profits of the Peking-Hankow Railway as equal to the amount of the loan, which has not been pledged for any other purpose. VII. The bonds shall be sold for $95 per $100 face value. VIII. The term of repayment of the loan is three years. In the first year only interest is to be paid and commencing from the second year the principal of the loan will be paid by half-yearly instalments. The repayment of principal will be made by means of drawings, which will be held in Peking, when one-quarter of the whole amount of the loan will be repaid, that is $1,500,000. The whole of the principal of the loan will be repaid on the 31st Decem-

ber of the 12th year of the Republic. IX. The payment of principal and interest will be made by such bank or banks as designated by the ministry of communications. X. Interest for the bonds shall be payable on the day following the payment of the bonds. XI. All the railways to which the purchased cars and locomotives, have been assigned, shall pay to the banks, which have underwritten the loan, certain sums towards the reserve fund for the payment of principal and interest of the bonds. XII. These bonds may be used as reserves of any bank or security of any member of the staffs on the different railways or as security to be deposited by the express companies or contractors. These bonds may also be sold or mortgaged or used as security for any other purposes. The coupons of these bonds shall be accepted at the date of interest payment as cash at any of the railways. XIII. The custodians of the bonds shall be punished in case of any fraudulent actions in connection with the bonds in the same manner as any abuser of the public bonds. XIV. At each drawing when the principal of the loan is paid, supervision will be exercised by the government auditors in company with the officials of the ministry of communications. XV. The regulations shall be valid on the day of promulgation.

* * *

The China Consortium

IN his speech at the China Association dinner, Sir Charles Addis had several important things to say with regard to the new Consortium and how it differs from the old. Under the agreement recently signed in New York, the four groups completely surrender their separate and individual interests, and the old *régime* of spheres of interest is abandoned. All these interests will in future be pooled. Thus one important source of friction will be removed, for each group will share in the general pool in agreed and defined proportions. With regard to the Shantung railway, which is dealt with in the Treaty of Versailles, Sir Charles explained that this question does not lie within the province of the Consortium, and it is obvious that it can only be reopened by the parties to that Treaty or the League of Nations. Unification of the railways of China, impossible under the old system, is one of the main objects of the new Consortium. It is proposed to set up a railway board to administer the system as a whole. The new Consortium, therefore, marks the beginning of a new era in the development of China which should bring marked benefits to her and ensure a minimum of friction amongst the Powers involved. It will be noted that Sir Charles made it clear that the governments of the four different countries concerned, Great Britain, France, Japan, and the United States, were actually responsible for the idea of substituting co-operation for conflict.—The *Times*.

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"The Far Eastern Review" and the Shantung Question

By George Bronson Rea

IN previous articles THE FAR EASTERN REVIEW has attempted to throw light on many of the questions that stand in the way of harmonious co-operation between the nations for the uplifting of China. In this number is found facts that dissipate many of the misconceptions concerning Japan's activities in Shantung. As far as I have been able to learn, no attempt has hitherto been made to ascertain upon the ground the truth about Japan's development of Tsingtau. Most of the sensational articles and reports concerning Japan's alleged unfair practices in Tsingtau have originated either in Peking or in Shanghai and from these points have been disseminated throughout the world in pursuit of a set policy to discredit and injure Japan.

The favorite charge against Japan is that she is planning to dominate Shantung, and, by discrimination and other questionable practices, to exclude other nations from equal opportunity in developing its trade and resources. In support of this statement, it is further alleged that the files of the United States state department are overflowing with reports containing concrete and specific evidence which convict Japan of double-dealing in securing for her nationals the monopoly of trade in Shantung. These statements may be true, but if they are, I am satisfied, after careful inquiry on the ground, that they did not emanate from American firms or interests in Tsingtau. If such reports have been submitted to the state department, other reports exist which nullify their value.

The highest American authority in Tsingtau is on record that the great growth of Japanese business interests in the port is due to the intelligent and far-seeing direction of Dr. M. Akiyama, chief civil administrator, and that if Americans and Europeans have not availed themselves of the many business opportunities, it is because they were preoccupied with other more pressing and important matters arising out of the war. *It has not been due to any unwillingness on the part of the Japanese authorities to extend privileges to other than their own nationals.*

The Japanese civil administration has placed itself on record that all inducements offered to industrial enterprises within its jurisdiction are open to all parties, irrespective of nationality. Furthermore, the Japanese authorities have expressed not only their willingness, but also their hope that American citizens will unite with Japanese subjects in developing the commercial and industrial possibilities of the port.

Many of the misconceptions surrounding Japan's position in Shantung arise from the note addressed to the Chinese foreign minister on May 25, 1915, by the minister of Japan, which dealt with Japan's conditions for the restoration of the leased territory to China. These conditions provided for the opening of the whole of Kiaochau as a commercial port; *establishment of a Japanese settlement in a locality to be designated by the Japanese government, and the establishment, if desired by the Powers, of an international settlement.* For at least four years, these conditions were commonly accepted as the basis upon which Japan would restore the territory to China; and, as foreigners watched the rapid development of the city, with its houses and factories all owned by Japanese, the conviction became settled in their minds that if an international settlement were eventually created, the business heart would remain under the control of Japan. It will take some time to dispel this idea.

Without following all the details of the various documents that mark the changes in Japanese policy regarding the transfer of Kiaochau, it may be said that the Japanese government has swung around in favor of an international settlement *without an exclusive Japanese concession.* As far as I can gather, the Japanese idea of an international settlement in Tsingtau differs radically from that which finds expression in the foreign settlements at Shanghai. They point to the fact that the international settlement at the latter place is a focus for trouble, the headquarters of Chinese revolutionary societies and movements, and a refuge for Korean and other conspirators, all safe from police interference. The Japanese believe that if Tsingtau is to be internationalised, provision must be made for proper police control by some competent authority, and that this sovereign Power should be China. The Japanese point seems to be well taken, as the creation of another international port that will serve as a safe refuge for conspirators against the authority of the central government of China should be guarded against in the interests of all nations. The settlement of this question now rests with China.

The official statement issued by the Japanese foreign office on June 15, 1920, in connection with the Shantung question is printed in full on pages 85-86 of this number of THE FAR EASTERN REVIEW. It will be seen from this document, that the Chinese government takes the position that as China has not signed the Peace Treaty with Germany, she cannot negotiate directly with Japan on the question of Tsingtau on the basis of that Treaty. The Chinese government also defends its refusal to negotiate with Japan direct because it is alleged that the people of China have assumed a strongly antagonistic attitude against such direct negotiations. In

other words, the Chinese government, acting upon outside advice, has now determined to have this question brought before the League of Nations or some other international convention.

It is doubtful at this time, whether China will be permitted to seek a solution of her Shantung troubles by resort to an international conference, as the original issue has since been expanded to cover the application of the Manchurian Treaties arising out of the Twenty-One Demands. China, at the Peace Conference, lost her golden opportunity to have the Shantung question adjudicatated on its merits as a separate issue. In the face of the secret agreements, under whose provisions Great Britain, France, Italy and Russia were compromised to support Japan at the Peace Conference, the Chinese delegation (influenced by their American advisers), insisted upon converting the Conference into a court for the trial of Japan.

In explaining the attitude of THE FAR EASTERN REVIEW on this question, it may be said that in response to an urgent cablegram from Peking, the publisher of this magazine obtained from the American secretary of state in May, 1915, an assurance that the American government would urge an international convention at the termination of the war in which the *whole* case of China could be presented and her status definitely defined for all time. On three subsequent occasions, when confronted with serious Far Eastern questions, the state department publicly reiterated and emphasized its set determination to refrain from any direct intervention in Far Eastern affairs, no matter what might arise, until the termination of the war, and then at the Peace Conference [or a separate convention to be called for the purpose], to have the *whole* case of China brought up for discussion and adjustment.

This brief outline of facts will explain to our readers why THE FAR EASTERN REVIEW has criticised the attitude of the American and Chinese delegations to the Peace Conference. With our knowledge of the facts, we were justified in believing that when the time arrived to carry out the above promises to the American nation, the status of China could have been amicably settled on a basis equitable to all concerned. We were, therefore, opposed to any course which rejected this golden opportunity and which concentrated the fire of the delegation upon any one nation, especially when that nation was Japan, who held the promises of the other powers to support her claims. From the outset of the negotiations in Paris, we advocated that the promises of the state department be lived up to and China's problem be placed before a separate international convention so that her *whole* case could be considered and acted upon. In this opinion we were supported by the British and French experts, who saw clearly the danger of turning the Conference into a tribunal for the trial of one of the most important Allies. The Conference had been called to make peace with Germany, not to raise issues amongst the victors.

We held that the rights of Germany should be surrendered in the Peace Treaty to the Allies, leaving Japan or some other Power as temporary trustee until such time as a separate international convention of interested Powers could be convened to adjust the many complicated questions that go to make up the problem of China. We felt then, as we do now, that the higher interests of the Chinese people would have been greatly advanced by adhering to this program, but unfortunately these ideas failed to harmonize with the program of those determined upon "making an example of Japan." It is on record, however, that at the eleventh hour, Secretary Lansing attempted to snatch victory from defeat by proposing to the Council of Five that the plan outlined above be adopted. It was then too late. Mr. Balfour, who had signed the secret agreement with Japan on behalf of Great Britain, said "quite so" when Viscount Makino remarked that the Shantung question was outside the jurisdiction of the "Five" and in the hands of the Council of Three.

THE FAR EASTERN REVIEW has been consistent in its stand for a square deal for China on the Shantung question. Had our advice been followed at the beginning, all the subsequent trouble arising out of this question would have been avoided. Now, at this late date, when all other solutions have failed, we find the American advisers and defeated Chinese delegates vociferating to have the Shantung question placed before the League of Nations, the Hague Tribunal, *or a separate international convention*. The Chinese and their advisers have returned to our starting point, clamoring for the very thing that we so strenuously advocated at the outset, and for which we have been condemned and persecuted by the inner circle that has dominated American relations with China during the last four years. THE FAR EASTERN REVIEW has the satisfaction of having been in the right, and of having lived up to its steadfast policy of securing real justice for China.

The troublemakers have had their day. The breach between Americans and Japanese has been perciptibly widened as a result of their activities following the Shantung decision at Paris. But the Shantung question has gone the way of all things in China—relegated to the classics. When it was seen that America had no intention to go to war with Japan over Shantung, China settled down to her old routine. It is a good time for Americans to stop and survey the situation, Let us look the facts in the face.

The facts presented in this Shantung number of THE FAR EASTERN REVIEW prove conclusively that there was no "discrimination against American traders at Tsingtau." There was no possibility for discrimination, because (as here testified) except the two American firms specified—the Standard Oil Company and the Katz concern—*there were no American traders on the job to suffer discrimination.*

* * *

The Shihchiachuang Railway

VISCOUNT Acheson, director of the British-American Tobacco Company (China), has just returned from a trip through that section of the famine area being traversed by the road from Shihchiachuang on the Peking-Hankow railway to Tsangchow on the Tientsin-Pukow railway, which is being built in aid of famine sufferers and towards the construction of which the British-American Tobacco Campany made a generous donation of $100,000.

The line is divided into two sections, a western and an eastern and for the time being work is being confined to the western section which consists of five divisions of 22 kilometres each. Work has been started 13 kilometres from Shihchiachuang and has been completed for about nine kilometres, the embankment being from six to eight feet high and 18 feet wide at the top. The point of junction with the Peking-Hankow railway has not yet been determined upon.

On the eastern section work has been temporarily suspended owing to the kilometres of the first division of the western section being 75 per cent. constructed, and work on each of the other divisions is under way. On the eastern section about eight kilometres have been 15 per cent. completed.

The engineering work is in capable hands and it is estimated that 1,500 men of each division, if working to full capacity, could complete the line in two months. The soil is very easy to work being composed of clay or clayey sand. The embankments are never more than ten feet high. Luckily the winter has not been very severe and it is doubtful whether the ground has ever been frozen to a greater depth than eight feet.

The arrangements made by the central authorities have, says Lord Acheson, been most efficient especially as regards organization and administration. The ground has been surveyed over a practically level surface for the whole length of some 220 kilometres. The necessary gaps have been left for culverts and crossings for country roads. Ample tools were available and the arrangements for food, salt, coal, etc., as well as sleeping quarters, were all that could be desired. More labor could be put on the job, however, and this will be arranged for from the concentration camps now that the weather is easing up and the frost is thawing out. Lord Acheson says that judging by the number and size of the towns through which the highway passes, the road should be self-supporting from the start.—*North-China Daily News.*

General Plan of Tsingtau Showing the 1921 and Future Harbor Improvements. This map also clearly shows the new districts laid out to streets and built up under the Japanese administration

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

Tientsin-Pukow Railway Congestion.—Congestion is very heavy on the southern end of the Tientsin-Pukow Railway. Hundreds of thousands of tons of stocks are awaiting transportation at the principal stations along the line. The ministry of communications has been requested to send sufficient rolling-stock to clear the goods.—*Chinese Press Report.*

New Link, Canton-Kowloon.—A plan is on foot to build a railway from Waichow to Ping Wu Station of the Canton-Kowloon Railway, a distance of 45 miles, has been passed by the Waiyang chamber of commerce. About $3,000,000 is needed to cover construction.

Japanese Railway Electrification Plans.—The bill for the electrification of the Japanese state railways is to be re-introduced in the Diet by the railway department. The government plans include several hundred miles of new lines.

The Chinese Rolling-Stock Loan.—The loan to be used exclusively for the purchase of rolling-stock for the Peking-Suiyuan, Peking-Hankow, Tientain-Pukow and Shanghai-Ningpo Railways, signed at Peking, contains the provision that all rolling-stock will be purchased in the open market. The lending banks will appoint experts to examine the cars purchased, and will be afforded facilities for examining them half-yearly, in order to see they are kept in good condition.

New Railway Line, Tzeliutsing, Szechuan.—A European railway engineer has commenced surveying for a short line from Tzeliutsing to Tenchingkuan, a small town at the mouth of the little river that flows through the Szechuan salt area. The salt has always passed down this little stream in barges, but the supply of water is very meagre and it takes the boats a long time to reach Tenchingkuan. The railway line, therefore, is very much needed.

Nationalisation of Nanzing Railway.—The shareholders of the Nanzing Railway have petitioned the government to nationalise the line by purchasing it from the present holders.—*Chinese Exchange.*

Famine Labor for New Chinese Lines.—The proceeds of the railway surtax will be utilized for the construction of the Chefoo-Weihsien and Tsangchow-Chenting Railways with famine labor. These railways have been chosen because they are already surveyed and famine sufferers could be employed on them immediately, but the famine revenues will be utilized solely for manual labor.

A New Chihli Railway.—The Chihli provincial assembly has passed a resolution in favor of the construction of a railway from Tsangchow (Tientsin-Pukow Line) to Shihchiachuang (Peking-Hankow Line), the funds to be raised among the gentry and the merchants of Chihli. The estimated cost of the railway is between six and ten million dollars. Influential men of the province are applying to the government for permission to construct the railway.

Japanese Did Not Object.—The Japanese legation at Peking states that Japan never objected to the construction of the Chefoo-Weihsien Railway, for which the Germans formerly claimed the right to furnish funds in the event of foreign money being required. Japan would doubtless protest in the event of any other foreign money being offered, but so long as the line is being constructed with Chinese money there is no ground for protest. Incidentally, the Chinese thus far do not propose to link up the Chefoo-Weihsien and Shantung lines, which was the condition upon which the Germans based their claim to the preferential right of supplying foreign funds.—*Reuter.*

Tsinpu Railway Nets $3 Million Profit.—The receipts of the Tientsin-Pukow Railway for year 1920 amount to $15,567,000 of which $3 million represent net profit. The Chiaotungpu considers this a splendid record and asks the government to award suitable recognition to the Tsinpu administration.

New Stations on Tientsin-Pukow Railway.—Four new stations have been established on the Tientsin-Pukow Railway line at Lichar-chong, Charmung-shan, Shau-bien-cheng and Tan-tse-kai.

To Train Purchasing Staff.—The Peking government "Gazette" publishes a ministerial order from the ministry of communications to the Peking-Mukden, Peking-Hankow and other railways instructing the directors to each select one or two experienced foreign-educated officials to send to London, New York and other foreign cities to act as disciples to those engineers and technical experts who are acting as advisers to the ministry for the inspection and examination of railway materials purchased abroad. This idea is to train experts for railway services so that in course of time, foreign goods bought from abroad by the various government-controlled railways can be inspected and received by Chinese engineers without the assistance of foreigners. Special regulations have been promulgated by the ministry governing the purchase and inspection of railway materials purchased from foreign factories. It is the intention of the government to gradually unify and consolidate the purchasing system so that materials purchased by one line can be used by another without difference.

Consortium Loan Terms?—A Chinese press report, states that Mr. Yung Kwei, Chinese charge d'affaires at Washington, D.C., in a communication dispatched to the Peking government, reports that at the latest conference held by the New Banking Syndicate, in New York, the following conditions relative to making loans to China were agreed on: (1) The syndicate to superintend the purposes for which the money is spent; (2) mines and railways to form the security; (3) money to be invested in manufacturing and other industrial purposes and not to be used, in any way for military expenditure; (4) money advanced to be limited to 20,000,000 silver dollars until the Republic is unified.

Chinghuachen-Pingyangfu Line.—The *Shunpao* reports: The Peking syndicate is negotiating with the Peking government about a loan to build a railway from Chinghuachen to Pingyangfu via Tsechow and Changping. This is quite a different line from the Chinghuacheng to Menghsien. The amount of the loan will be decided after estimating the total amount of work and materials. The syndicate has sent the experts to Honan and Shansi to estimate the works.

New Railroads, Japan.—The Japanese railway department has given permission for the construction of two private railroads: (1) Shimotsuke Railroad Co., Ltd. and to construct a steam railway between Imaichi-machi and Fujiwara-mura, to Chigi prefecture, a length of 16.65 miles; (2) Onsen Electric Railroad Co., Ltd. to construct an electric railroad between Yamatno-mura and Komatsu-machi, Ishikawa prefecture, a length of 6.08 miles.

Japanese Railway Revenue, 1920.—Notwithstanding the business depression that has been felt since May 1920, the Japanese state railway service has not been badly affected, an increase being seen in the receipts from both passengers and freight. According to an official report, the total number of passengers carried during last year stood at 373,202,414, the receipts therefrom amounting to 203,548,751 yen. The figures show an increase of 58,863,474 in the number of passengers and of 55,032,662 yen in receipts as against the preceding year. The freight carried during the year amounted to 54,468,740 tons, the receipts therefrom reaching 127,609,801 yen. Compared with the preceding year, the receipts indicate an increase of 2,758,067 yen though the amount of freight carried represents a decline of 1,792,237 tons.

Japan's Railway Jubilee.—Under the auspices of the department of railways, a jubilee in commemoration of the opening of railways in Japan will be held in Tokyo in the middle of May.

May Remove Tangshan Station.—Tangshan station on the Peking-Mukden line, in the vicinity of the Tangshan Colliery, is thought to be unsafe. The railway authorities are considering its removal.

New S.N. Rolling-Stock.—The Shanghai-Nanking Railway have purchased 7 locomotives, 80 freight cars and 9 passenger cars from Jardine, Matheson & Co., Ltd., at a total value of more than $1,130,000.

Sleepers for Peking-Suiyuan Railway.—The Peking-Suiyuan Railway has purchased 140,000 sleepers from the Mitsui Bussan Kaisha.

Obstructing Mr. C. C. Wang.—The recently elected board of directors of the Chinese Eastern Railway is, according to advices received from Harbin, finding it difficult to function. The railway is again losing money in considerable quantities, due principally to the dullness in business and the Chinese closing of the Manchul frontier. Only about 250 freight cars a day are being loaded for hauling on the railway, while a minimum of 350 is, according to estimate, necessary to make the railway support its upkeep. Passenge traffic has not, for some years, ranked as a revenue producer.

Friction between the Russian and Chines members of the new board is reported to hav already developed. Little initiative is shown b any of the members with the exception of China most experienced railroad man, C. C. Wang. B his endeavors to push things along, he is said however, to have incurred the displeasure of th other members of the board, both Chinese and fo eign.—*China Press.*

TRAMWAYS

Peking Tramway Proposal.—The Peking go ernment has suggested to the French bankers wh are providing funds for the construction of t tramway in Peking that the Chinese governme will prefer to raise the sum of $2 million to partly subscribed by the government and par by Chinese merchants so as to make a combinati of French capital with semi-official Chinese capit —*Peking Exchange.*

Woosung-Yangtszepoo Line.—In connection w the Woosung port development now under way is proposed to carry a line of tramways from Yangtszepoo terminus along the military road Woosung, and then to the city of Paoshan, turning via Paoshan country to the west of

(8) Each of the parties issuing the residuary participation will apply for and use its best endeavors to obtain a quotation on its market for the total amount issued by it.

(9) No issue of the residuary participation or any part thereof shall be made by the party or parties giving such notice or notices unless mutually agreed by the parties hereto.

7. No participation shall be given by any one of the parties hereto outside its own market. Any participation given in its own market by any one of the parties hereto shall be for its own market only or in the event of the issue including any of the residuary participation for the accounts *pro rata* of the issuing bank and the party or parties giving such participation, the party giving the same shall use its best endeavors to secure that no part of such participation shall be transferred to parties outside the market of the party giving the same. Any other participation shall be given only with the consent of all parties hereto and shall be borne in equal shares by the parties hereto.

8. This agreement shall remain in force for the period of five years from the date hereto provided nevertheless that a majority of the parties hereto may by twelve months' previous notice in writing addressed to the other parties hereto determine this agreement at any time.

In witness whereof the duly authorized representatives of the respective parties hereto have set their hands the day and year first above written.

For the HONGKONG AND SHANGHAI BANKING CORPORATION
On behalf of the British Group :
C. S. ADDIS.

For the BANQUE DE L'INDO-CHINE
On behalf of the French Group :
TH. DE LA CHAUME.

For the YOKOHAMA SPECIE BANK, LTD.
On behalf of the Japanese Group :
K. TAKEUCHI.

For and on behalf of the American Group :
J. P. MORGAN & CO.
KUHN, LOEB & CO.
THE NATIONAL CITY BANK OF NEW YORK
by J. A. STILLMAN, *President.*
THE GUARANTY TRUST CO. OF NEW YORK
by J. R. SWAN, *Vice-President.*
CONTINENTAL & COMMERCIAL TRUST & SAVINGS BANK, Chicago
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America and Japan in Manchuria

Harriman's Plan to Force Japan to Sell the South Manchuria Railway

WHEN the Peace of Portsmouth was signed, relations between Japan and America were most cordial. Japan had fought her great adversary, driven her back beyond the Sungari, and drenched the soil of Manchuria with the blood of her sons. Her reward, the fruits of her victory, consisted of a broken down, busted railway, with its short term lease inherited from Russia. True, she received the southern half of the frozen island of Saghalien, but the one tangible award was the South Manchuria Railway, while Russia retained control over her military line and base in the north, undamaged by the war. Japan had no funds even to convert her prize into a going concern. She was bankrupt, or almost so. She borrowed the funds in England and spent them in the United States to reconstruct the railway. She had to work quickly and be ever on the alert to fortify herself against the return of her formidable enemy.

This was the situation, in brief, when Mr. Harriman, the great railway manipulator, conceived his idea for a round-the-world transportation system, and initiated those fateful and secret negotiations which have since been made to serve as the lever to undermine Japan's position in Manchuria. We could write a book from our own experiences on the various ramifications surrounding the Manchurian controversy, but prefer to let the story be told by Mr. Willard Straight, who speaks to us out of the grave through the pages of the great magazine he created. In effect, Mr. Straight tells us that while he was still acting as consul-general, he was at the same time in correspondence with Mr. Harriman, elaborating a scheme which would nullify Japan's position in Manchuria through competing railway rights.

Mr. Straight tells us in no uncertain terms, that the Chinchow-Aigun railway contract (the counterpart of the Taonan-Jehol line) was to be employed as a lever to compel Japan to sell out her rights to the South Manchuria Railway to Mr. Harriman, or, if Japan was unwilling to make such an agreement, then the alternative line would place her in a "very embarassing position in Manchuria." It is well that the reader should form his own opinion from the facts. We republish in full the story of Mr. Straight, from the February 1921 number of "Asia." It needs no comment. The policy of the consortium, the whole attitude of America towards these questions must undergo a change. We are confident that the American people when they know the facts, will never go to war against a friendly power in order to further the grandiose schemes which originated in the mind of the greatest railway manipulator and stock exchange operator our country has ever produced.

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AN AMERICAN IN ASIA

Willard Straight in Far Eastern Finance

By Louis Graves

The impression that he made upon E. H. Harriman, when the railroad financier visited Korea in 1905, was directly responsible for Willard Straight's entrance into the financial affairs of the Far East. Harriman's imagination had been seized by the vision of an around-the-world Harriman transportation system, with the Trans-Siberian Railway a part of it. It was Harriman of all American financiers who first saw the opportunity for great American development in the Far East and backed his belief with hard personal work and large plans.

"The working out of the Eastern question interests me and there is much we can do to get it started on more direct and straightforward lines than heretofore," Harriman wrote Straight just before his death after four years of correspondence and relationship with Straight in Far Eastern affairs. And in a letter to another he thus recorded the reason for his interest. "These financial groups are very uncertain and shift and change with the signs of storm or calm. The development work appeals to me more than anything else. After we have determined what we will do, then we can arrange the financing, and how it shall be done and who shall profit by it."

"I understand," wrote Straight in a memorandum, "that the suggestion that Mr. Harriman make the journey of 1905 to the Orient came from the Japanese government, with whom he had established close relations by virtue of the assistance rendered by him and by Mr. Schiff in co-operation with Sir Ernest Cassel of London, in floating the Japanese loan in New York and London. *By reason of the Russian defeat, he believed it might be possible to make some arrangement for the acquisition of the Russian Trans-Siberian line.* In July or early August, 1906, assisted by Mr. Lloyd Griscom, then American minister to Japan and Mr. H. W. Denison, an American attached as adviser to the Foreign Office, Mr. Harriman reached an understanding with Marquis Ito and Count Katsura, then the Japanese premier, under which Mr. Harriman was to furnish the capital for the reconstruction and operation of the South Manchuria Railway and for the development of various mining, timber and other enterprises along the line. These the Russians had extracted from the Chinese, and the Japanese in turn had taken from the Russians. The Japanese were to have a joint interest and political control in this undertaking. Mr. Harriman was assured there would be no hitch, but was advised that nothing definite could be done pending the result of Count Komura's negotiations with the Chinese government."

A year later Straight learned from Harriman that he had been informed through one of the leading Japanese financiers that the Chinese had not approved and the Japanese had determined to deal with the problem themselves.

"Mr. Harriman's project had not been definitely turned down, but it was obvious that no further progress could be expected," wrote Straight. "*Prior to my departure for Mukden,* in *August* 1906, *Mr. Harriman asked me to keep him advised as to railway developments in Manchuria. He was still determined if possible to obtain a foothold in that region to carry out his scheme.* Ultimately the Japanese government arranged to obtain in London the funds with which to finance the construction of their South Manchuria road. The Japanese, much to the disappointment of British interests, expended the funds which they had obtained in London in placing orders for railway material in the United States. In doing so, as I understand it, they wore partly influenced by a desire to make up in some way for the failure to carry out their agreement with Mr. Harriman."

This decision by Japan to hold fast her claims in Manchuria marked the unfolding of her imperial plan in China. It also marked the beginning of a long and tedious, but obdurate fight, in which Straight played the leading active part—aimed to prevent Japan and Russia from closing in on Manchuria to the detriment of other national interests and Chinese sovereignty. The conclusion five years later of the contract between China and the six power group—the United States, England, France and Germany with Japan and Russia admitted as partners—for joint loans to China, was the first great result of the fight. The consortium of 1920 is the sequel.

The story of the fight begins in the summer of 1907, *with Straight as consul-general at Mukden. The general aim was to establish an American economic foothold in Manchuria. The concrete aim was to build a railroad which, by paralleling the South Manchuria Railway (Japanese) and its northern extension to Harbin (Russian), should nullify the strategic control over Manchuria held by Russia and Japan through their possession of this railroad link between the Trans-Siberian line and an ice-free port on the Gulf of Chihli.*

"At that time," Straight wrote, "Lord ffrench, representing Pauling and Company [British contractors], and J. O. P. Bland, representing the British and Chinese Corporation, came to Mukden and secured from the Chinese government the right to build an extension of the Chinese Imperial Railways [the line from Peking to Mukden] from Hsinmintun, north to the town of Fakumen, 47 miles distant, with the ultimate right to extend this road to Tsitsihar [about 400 miles north] on the Trans-Siberian Railway. [This would have given a railroad connection from the Trans-Siberian line across Manchuria to the sea, quite independent of the Russo-Japanese line.] I was familiar with these negotiations. *They seemed to offer an opportunity for the realization of Mr. Harriman's plans and for the creation of Anglo-American-Russian co-operation in Manchuria. This I believed to be essential, for I did not feel that the United States was sufficiently strong politically alone to undertake to counterbalance Japanese influence.*"

What the building of this British railroad as a parallel to the Japanese South Manchuria line might have meant politically may be judged from a significant statement recorded by Straight:

"After lunch, Goto's aide [Baron Goto, minister of communications] came in. *He said Japan would, if necessary, with weapons, prevent the construction of the Hsinmintun-Fakumen Railway.*"

The Japanese protested to the British, their allies, and the British foreign office withdrew its support from the scheme, which fell by the wayside. But Straight adapted it later to the plan he was working out, as providing the means for joint American-British action in Manchuria under American leadership.

"I had several discussions with the Viceroy [Hsu Shih-chang, now president of China] and Governor [Tang-Shao-yi]," Straight wrote, "and as a result drew up an outline of agreement, which would give to American interests the contract for a loan of some $20,000,000, carrying with it the right to establish a Manchurian bank to co-operate with the Manchurian government. This bank would be the financial agent of the Manchurian government in undertaking mining, timber and agricultural development and the construction of certain railways, among others the line from Tsitsihar running north to Aigun on the Amur River. *This scheme I sent to Mr. Harriman in September,* 1907. *Early in October I received a cable stating that financial conditions in New York were such, brought on by the panic, that the transaction would be impossible.*"

This plan put up to Harriman for backing was Straight's first important contribution to the solution of the Far Eastern problem through American action. He was convinced of Harriman's intention to put through a big idea and he knew that the panic of 1907 meant only a temporary delay. In the field, he continued to work in close contact with Tang Shao-yi and to keep the state department and Mr. Harriman fully informed at home.

The relationship of these two men—Straight, a mere untried youngster of twenty-seven, out on the field, and Harriman, the greatest railroad-financial genius of his generation, at home, each working with independent mind and vision, with strong confidence in the other and with assurance of America's ability to attain a place of great influence on the Asiatic continent—was a dramatic one. The two stood out alone in the breadth of their vision and resourcefulness. All the time Straight in Manchuria, in touch with actual conditions, was working out plans and the diplomatic facilities for carrying them out, to be put up to Harriman. He was confident that, when the time was ripe, Harriman had the abiding interest and the nerve to put his power behind them. Harriman on the other hand relied with rare confidence on the observing power, vision and good judgment of Straight. So *great was this confidence, that a year and a half later* Harriman *was making strong representation to the Taft administration that Straight, who considered himself much too young for the post, should be made minister to China.*

In 1908, almost a year from the time Straight first put up his proposition to Mr. Harriman, he was suddenly summoned by cable through the request of Mr. Harriman to return to the United States to discuss the Manchurian financing plans. Harriman had seen that conditions were right financially for reviving the Far Eastern loan. On the night before leaving Mukden—rather, at six in the morning—Straight signed a memorandum of agreement for a $20,000,000 loan along the lines of the discussions of the year before, including a Manchurian railroad. This was a rough preliminary, not the detailed agreement, which it required two more years to get.

"I carried the agreement for nearly six weeks in a small wallet tied about my neck in silk case," wrote Straight. "That memorandum was the groundwork upon which the American group is based."

He was made acting chief of the division of Far Eastern affairs in the state department soon after his arrival in Washington. He took up with Mr. Harriman immediately plans for completing the loan they had discussed.

"On the third of December, 1908, by Mr. Harriman's direction, I called upon Mr. Otto Kahn of Kuhn, Loeb & Company and took up with him the question of the loan to China," he wrote. "Prior to my departure from Mukden it was determined that China was to send Tang Shao-yi as special ambassador to thank the United States for the return of a portion of the Boxer indemnity, and that on his arrival in America he should complete the negotiations for the loan the preliminary agreement for which I brought home with me. In the meantime, early in November, both the Empress Dowager and the Emperor Kuang Hsu died suddenly. At the and of October, moreover, Baron Takahira, who was then Japanese ambassador to Washington, had suggested to President Roosevelt and Mr. Root that, in order to prevent any difficulty between Japan and the United States in the Pacific, there should be an interchange of notes regarding the preservation of the "open door" in China, stipulating that both the United States and Japan should mutually respect the other's interest in the Far East.

"It seemed obvious that Japan was endeavoring to forestall the arrival of Tang Shao-yi and the attempt which it was believed he would make to reach some understanding with the United States, by making it appear through the interchange of such notes that there was a virtual alliance between the United States and Japan. Mr. Root and President Roosevelt were induced to postpone the actual signature of these notes until Tang's arrival. He reached Washington on November 30, the notes were shown him at noon that day by Mr. Root and the notes themselves were signed at four o'clock in the afternoon.

"Tang was very much discouraged. On the death of the Emperor Kuang Hsu, his nephew was named as his successor and his brother, Prince Chun, appointed Regent. The Regent hated Yuan Shih-kai and every effort was made to remove him from office. *Yuan, however, was endeavoring to hold his position by claiming that, through Tang's negotiations in the United States, he would be able to secure American support, which would counterbalance Japanese domination in Manchuria.* The interchange of notes with Japan was promptly used by the Japanese, who were intriguing against Yuan, to prove that Yuan had failed in securing American support and that the United States instead of supporting China against Japan had in reality concluded a virtual alliance with the Japanese government. Yuan was driven from power early in January, 1909, and Tang himself left the United States for London shortly afterward. He felt that any further discussion of the loan was useless. The loan negotiations were dropped for the time being."

But they were dropped only from the Chinese end. The American negotiators were, if anything, more determined than ever to see things through. Mr. Harriman reverted to his original plan of 1905-1906 for the purchase of the Japanese and Russian lines in Manchuria. But during the subsequent conferences in the early part of 1909, a complementary and alternative scheme evolved. *This was to secure from the Chinese a definite contract for the building of another railroad in Manchuria, which could be used as a lever to influence the sale of the Japanese and Russian lines or, failing in this, could be built as an alternative line.* Straight tells of these developments as follows:

"While these events were taking place in Washington and China, Mr. Harriman had kept closely in touch with the situation and my discussions with Tang Shao-yi. In November, Mr. Schiff, who was in close touch with Mr. Gregory Wilenkin, formerly the Russian financial agent in the United States and then the Russian agent in Japan, had been advised that there was still some possibility that Russia would be willing to sell the Chinese-Eastern Railway, if Japan would agree to sell her Manchurian line. Mr. Schiff wrote to his friend, Baron Shibusawa, to ask whether the Japanese would be willing, in view of the previous memorandum of agreement with Mr. Harriman, to sell the South Manchuria Railway to American interests, provided the Russians would sell the Chinese Eastern.

"*This proposition the Japanese turned down. Early in December, I prepared a memorandum as to the basis upon which these two lines might be acquired.* The matter had been taken up with Tang Shao-yi, who had said that China would be glad and would cooperate if we could organize an international syndicate to purchase both lines on behalf of China, thus anticipating the provision for repurchase of the lines contained in the original agreement of 1896 between China and Russia. This memorandum I believe formed the basis for the Knox neutralization proposals [for an international syndicate to buy out the Russian and Japanese railroad holdings in Manchuria]."

Here the situation becomes complicated by the introduction of discussion of another loan to enable American financial interests to take up participation in the building of the Hukuang Railways in South China. The state department had been fighting for the right of American finance to enter this loan with the British, French and Germans. There were therefore three ideas moving concurrently in the minds of the Americans. First and immediately came the effort to purchase the Russian railroad in Manchuria. Secondly, there was the necessity for immediate action to enable the United States to take its place in the Hukuang loan. *Thirdly, there was the fundamental plan in the minds of Harriman and Straight to obtain from the Chinese a Manchurian railway contract to make the American position secure, whether the Russians or the Japanese sold their railroad or not. This contract, later secured, was known as the Chinchou-Aigun plan.* The negotiation of the contract was to be the first essential in the American position. But no contract with the Chinese could be official without a ratifying edict. And therefore the edict for this contract, told of later in the story, became the key to the whole American position. It was in the development of this idea for the Chinchou-Aigun Railway that Straight contributed his first big share in the team-work with Harriman and the group of American financiers now interested.

"Early in May, Kuhn, Loeb & Company decided to send a representative to China to endeavor to complete the loan negotiations which had been undertaken the previous year," Straight wrote. "Subsequently it became obvious that unless American financial interests were willing at once to enter the field, the right to participate with the British, French and German interests in the construction of the Hukuang Railways would be lost to the United States. At this time I was working very closely with Mr. Robert Bacon of J. P. Morgan & Company. That firm was also thinking of sending a representative to Peking, and, in order to secure co-operation between the American financial interests, and to secure as strong representation as possible, it was agreed in June to form the so-called American group, consisting of J. P. Morgan & Company, Kuhn, Loeb & Company, the First National Bank and the National City Bank, and I was designated as their representative. The group was finally organized early in June.

"Mr. Harriman sailed for Europe at the end of May and I followed at the end of June. In early July we had a conference in London regarding the Hukuang Railways without reaching any satisfactory understanding. Shortly after, I went to Bad Gastein where Mr. Harriman was then taking the Cure. I stayed two days with him and talked over the Far Eastern situation very fully.

"No one, I think, was familiar with Mr. Harriman's plans for his Manchurian railway and round-the-world transportation system. I doubt very much if Mr. Kahn knew the details and I am quite sure that none of the other interests of the American group, in which Mr. Harriman also had a participation, were at all familiar with his ideas. While in Paris Mr. Harriman had arranged with Mr. X——to go to Petersburg to discuss with the Minister of Finance the possible purchase of the Chinese Eastern Railway [the northern Manchuria line]. I was to endeavor to secure from the Chinese government the right to build a line from the Gulf of Chihli to run north to the Trans-Siberian Railway, possibly up to the Amur.

"Once an agreement had been reached with the Russians and the right for the construction of a north and south line secured from China, we would have been in position to negotiate with the Japanese. If they had been willing to make some arrangement regarding joint operation of the South Manchuria Railway, it would have been unnecessary to construct another north and south line. If they were unwilling to make such an agreement, the construction of another north and south

line operating in conjunction with the Russian road would have placed them in a very embarrassing position in Manchuria.

"I reached Peking early in September and on October 2, with Pauling and Company, signed with the Viceroy of Manchuria an agreement for the construction of a line from Chinchou on the Gulf, to Aigun on the Amur, making the first step in Mr. Harriman's scheme. This line was to be financed in America, and to be constructed by Pauling and Company, who had the original concession from the Chinese government for the line from Hsinmintun to Fakumen. We hoped thus to have the advantage of securing Anglo-American co-operation.

"I had received word of Mr. Harriman's death on September 10. Returning to Peking from Mukden, I found a letter from Mr. Harriman, written on the way from Paris to Cherbourg, in which he told me that X——had come back from Petersburg, where he had arranged with Kokovtseff, the minister of finance, that on his return to Russia from a trip which he was about to make to Vladivostok, he (Kokovtseff) would recommend the sale to American interests of the Chinese Eastern Railway. Mr. Kokovtseff in accordance with his promise did on his return make this recommendation.

"The arrangement had been made with Russia, the contract secured from the Chinese government, but the directing genius had gone. I cabled to New York, urging the group to get in touch with Mr. Harriman's secretary and familiarize themselves with his plans. I had previously urged that a representative be sent to Petersburg in order to negotiate with the Russians but this recommendation had been turned down. No one in New York knew precisely what Mr. Harriman had in mind; no one was capable of carrying through his scheme. The group, I understand, advised the state department of the arrangement which Mr. X——had made. Shortly after, they cabled me, asking whether the imperial edict had been issued, ratifying my preliminary agreement with the Viceroy of Manchuria.

"I replied that from reliable sources I understood that the edict had been issued. [As a matter of fact, it had not, though a secret and vague conditional edict had.] Without cabling the legation, which at that time was in charge of Fletcher [recently ambassador to Mexico], without waiting for confirmation from me, the state department, on the basis of the report above mentioned, launched the neutralization proposals [the invitation sent to the Russian, Japanese, Chinese, British, French and German governments to join in an international arrangement to buy out the Russian and Japanese railroad possessions in Manchuria with an alternative proposition to join with the United States in building the Chinchou-Aigun Railway, the potential rival of the Russian-Japanese line].

"The scene had been set, but to carry through the plan it would have been necessary to conduct unofficial conversations with both Tokyo and Petersburg, to secure the approval of London and Paris and possibly of Berlin, and then, when all arrangements had been made, to make an official proposal. *It would have been wiser, probably, in any case, to have left these negotiations in the hands of private individuals. The scheme was all right but it required delicate handling instead of blacksmith methods.* In Russia, M. Izwolsky, the minister of foreign affairs, was a bitter enemy of Kokovtseff. Also he was anti-American. Izwolsky desired a closer understanding with Japan and Kokovtseff wished to work with American capital. By handling these neutralization proposals through diplomatic channels, the negotiations were placed in the hands of Izwolsky and not of Kokovtseff. Izwolsky used the whole scheme and the bogy of an American incited anti-Russian China, which he built upon it, and the manner in which it had been presented, to convince his colleagues in the government that the only protection against American intrigue was a rapprochement with Japan. He was successful. The proposals resulted in a rebuff to the United States, the nullification of all work which had been done by Mr. Harriman [in endeavoring to buy or internationalize the Russian and Japanese lines in Manchuria] and the signature of the Russo-Japanese agreement of July 4, 1910 [for mutual co-operation and protection of interests in this territory], which practically lost Manchuria and Mongolia to China."

Whatever declaration Russia and Japan had made in treaties and conventions, what these two did *not* want was the "open door" in Manchuria and they quickly came together to defeat it.

The Knox neutralization proposals came out early in 1910 and immediately threw the Russians and Japanese into each other's arms. But though the Knox proposals forced the Russians and Japanese to refuse definitely to sell their railroad lines in Manchuria and furthermore aroused their intense opposition to the building of the Chinchou-Aigun Railway, Straight and Fletcher kept fighting for it with confident hope of success. And success they achieved in the final contract signed by the Chinese a few months later.

"Fletcher managed to extract the Chin-Ai edict from the Chinese," wrote Straight, "on practically the same day that the Knox proposals were published, and Washington's face for the moment was saved—a little bit." But the final agreement for the loan still had to be drawn.

"Our whole play is to work China's fear of Russia and Japan to get our detailed agreement through," Straight wrote later, "then to take Japan and Russia out of the way. Had we done this first and then tried to put through out detailed agreement, the Chinese would have laughed at us.

"The Russians have put their foot down and the Chinese are in a blue funk. They will not move until forced into action by our government. Whether Washington can do more than it has done already to help this ungrateful, vacillating, weak-kneed lot of officials, I don't know. It could if they'd do even a little to help 'emselves."

"Fletcher and I threatened Korostovetz [Russian minister] the other day," wrote Straight on April 17, "that if he didn't get his government to allow our railway to go through without further protest, we'd jolly well have Pauling & Company and the group open an office in Teheran and Constantinople and make a little trouble there. He was quite inclined to take us seriously.

"I saw that the Chinese were dilly-dallying and would continue to do so indefinitely if they were let. I saw that, once we had them under agreement, we could go no farther until we had either squared or defied Petersburg. The last course we could only risk as a last resort. Furthermore, our only club to bring the Chinese to terms was a threat to leave them to the mercies of Japan and Russia. So when things were pretty well settled, I announced that I would leave for Russia and New York. If they closed before I went, I should negotiate on their behalf with the Russians; if not, I should return to New York and report that they were not seriously anxious to build a railway, but were only using us for political purposes." Straight wrote this on April 21.

"Before I left China in April," he wrote later, "we had completed our negotiation of the final agreement for the Chin-Ai line. The Russians and Japanese had entered protests at Peking. But we hoped to be able to reach some understanding with the Russians. To this end I went to Petersburg in June, 1910, and met the ministers interested. I came away convinced that if we started to build our line and told the Russians we would only go as far as Taonanfu for the time being, we would eventually be able to complete the work. This proposition, however, was turned down.

"The Chinese wished to know what the American government was going to do about it all. The Russians, however, had clearly stated that, though they couldn't stop our building the line and had no treaty rights on which to base their protest, they would jolly well take it out of China if she tried to cross their Trans-Siberian road at Tsitsihar, and approach the Siberian frontier. We ourselves couldn't fight. The Chinese would have gone ahead if we had promised to back them up, but this we could not do, and, had we pushed the matter, we should probably have gone off scot-free and seen China lose a slice of territory or two. Our government, therefore, say down in front of the stone wall to the construction of which it had so largely contributed."

This conclusion of Straight's was set down long after the event but during this spring of 1910 hope of success for the Chin-Ai plan ran high. This hope was strongly encouraged by the belief that England, through its alliance with Japan and the influence it could surely exert, if it would, at St. Petersburg, would stand for the "open door," particularly as British interests were directly involved. But instead, England herself yielded.

" It's not the "open door" but the Door Mat policy—and China pays," wrote Straight. "An intimation from Sir Edward Grey to Japan that interference with this project would be regarded as a serious breach of Japan's treaty obligations, and a hint that the London market might tighten against Japan as a result, would have chastened her at once. Had Downing Street firmly but politely told Russia that, if she continued to oppose China's legitimate development in Manchuria, it would be necessary for Great Britain to reconsider her position all along the line, Russia would have been careful. British weakness has been the signal for Russian and Japanese bullying."

The Chinchou-Aigun project was therefore practically dropped. But for Straight it only meant but one battle in the fight and he turned to other projects—the currency loan and the Hukuang loan—to attain the same end.

Straight had come to Peking athrill at the prospect of setting in motion a vast development. The Manchurian loan and the Hukuang loan were matters immediately at hand. But he saw them as the beginning of a new era for China—the symbol and the promise of still greater things to be. Not bankers' profits but the sweep and bigness of the whole scheme—its meaning to the future of his country and to millions of men in Asia—stirred his imagination. Hence the atmosphere of distrust in which he found he had to work fell, at times, like a pall over his spirit.

" What bitterness there is in this China game ! " he wrote in one of his letters home. "It is sickening sometimes. It is almost impossible for you to realize the pettiness and suspicion that prevail here, where every one more or less is spying on every one else. It is the storm centre of world politics, and the foreign community is very small. We see each other nearly every day—there are but few outside influences and diversions—and this brings out the little meannesses of human nature.

" Because one man does not invite another to dinner, because A's wife doesn't call on B's, B curses A and blocks his business. A invites B to dinner and pumps him dry ; and if B be weak or vain, the chances are that A will learn things B has no right to divulge. You are up against the game all the time ; each party to it finds little respite ; for even our distraction must be shared by the same fighting crowd, who carry the scrap with them to the dinner-table and the polo-field."

Though Manchurian development plans were the underlying feature of Straight's work in this winter of 1909-1910, the matter of American participation in the three power loan for the Hukuang Railways was of concurrent interest. But now a new undertaking supplanted both Hukuang and Chinchou-Aigun in the centre of the stage. This was the currency loan, for the reorganization of China's monetary system, a structure tottering insecurely upon a silver foundation.

Japan's Dependence on Foreign Raw Materials

THE Portuguese minister-consul at Kobé makes the following report on the resources of Japan in reply to questions sent to him by the ministry for foreign affairs. Japan is entirely dependent on British India, the United States and Great Britain. For cotton India is indispensable, but Japan also inports some from the United States and China. Sheet iron and steel, and rails, she also receives from England and America, and to the latter she has to turn for mineral oil and leather. Australia supplies most of her wool. For the above commodities she will always be dependent on the foreigner.

Iron, one of the products most essential to her, she only obtains from three mines. Her oilfields are more important, but do not suffice for her needs. At the end of 1918 these numbered eight, and their yield was as follows :

	Koku.
Kurokawa (Nippon Company), Akita ...	625,497
Toyokawa (Oil and Asphalt Company) ...	121,193
Nittsu (Hoden Company), Niigata	502,775
Asahi (Chuo Company), Niigata	109,189
Kanatsu (Nakano Company), Niigata ...	124,743
Higashiyama (Hoden Company), Niigata ...	184,941
Nishiyama (Nippon Company), Niigata ...	320,999
Nishiyama (Nippon Company), Niigata ...	231,025

Cotton is not much cultivated in Japan, and never can be, owing to the climate, and also because every part of the empire available for cultivation is required for rice. Neither has Japan any wool owing to an absolute lack of pasturage. Attempts have been made to grow it, and sheep have been imported from Australia, but without success. The hills are covered with bamboo, which kills all other vegetation and produces sickness among the live stock. The import of wool cannot, therefore, be reduced. The above commodities are absolutely essential to the existence of Japan, not only for re-export in the form of manufactures, but also for home use.—*The Financier*, London.

Chinese Coal

OUR discontented miners would do well to read, mark, learn and inwardly digest the fact that France has just bought 100,000 tons of coal from the Chinese government, says the London *Post*. This " deal " synchronizes with the advice given by all the South African shipping lines to burn coal from the Transvaal mines, and is an indication of the trend of things incident to the exorbitant demands of labor. China's coal supply is practically inexhaustible, and is virtually untouched. She has enough good coal to supply the whole human race at its present consumption of a billion tons a year for a thousand years. The coal-bearing areas of China have been estimated at more than 200,000 square miles—a territory twenty-five times the size of Wales, and it is a remarkable fact that, instead of being limited to a few favored districts, this vast supply of coal is found all over the empire and in every province.

Found in an iron pot in 1917, a note of the Mitsui Bank, drawn in 1880, for Y. 160,000 and purchased by Yasutati Murakami, a medicine manufacturer of Dojima, Osako, has been held good by the Yokohama District Court. The bank has been directed to pay Mr. Murakam the face value with accrued interest.

Sixty million firecrackers will be manufactured by a Seattle company in China to help young America celebrate the 1921 Independence Day. W. E. Priestly, secretary of the Hitt Fireworks Company, made this announcement in Seattle on his return from Hongkong, where he installed a new factory in an old hospital building just purchased by the company from the British authorities there. The output for the next July 4 celebration will be sixty million small and large firecrackers to be shipped to Seattle and New York, while advance orders have already been received for twice that number of fireworks for the 1922 season.

The Far Eastern Review

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ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, MARCH, 1921.

The Covenant of the League:

"The High Contracting Parties, in order to promote international co-operation and to achieve international peace and security by the acceptance of obligations not to resort to war, by the prescription of open, just, and honorable relations between nations, by the firm establishment of the understandings of international law as the actual rule of conduct among governments, and by the maintenance of justice and a scrupulous respect for all treaty obligations in the dealings of organized peoples with one another, agree to this Covenant of the League of Nations."—The Preamble of the Covenant.

"The Members of the League undertake to respect and preserve as against external aggression the territorial integrity and existing political independence of all Members of the League. In case of any such aggression or in case of any threat or danger of such aggression the Council shall advise upon the means by which this obligation shall be fulfilled."—Article Ten, styled by President Wilson "the heart of the Covenant."

A Square Deal for China

A Railway Program for the Consortium

"*A CONTRACT is a Contract.*"—This is the basic law of commercial morality. We cannot apply one principle in one part of the world and another in another part. In Paris at the Peace Conference, Great Britain and France insisted upon the inviolability of their contracts with Japan over Shantung. Quite recently, the American and British chambers of commerce in Shanghai invoked the same law, when Chinese merchants were caught in a falling market and endeavored to cancel their orders. Yes, a contract is, and must remain, a contract. Let us extend the application of the fundamental law to China, and see how it affects the consortium and its railway policy.

With the exception of the Siems-Carey and the preliminary Japanese railway agreements, all Chinese railway contracts now pooled in the new consortium were negotiated prior to August, 1914, on pre-war financial terms and conditions, that is to say, five per cent. interest on the loans, four per cent. commission to the bankers and a five per cent. commission on the purchase of materials. There are some variations from these basic terms, such as are found in the Pauling and the French contracts. Conditions have changed. It is now impossible to float the loans on the above terms. If unsupported by diplomatic pressure, the contracts are not worth the paper they are written upon. Many of these contracts were extracted from the Chinese government under severe diplomatic pressure, in some instances under ultimatums. The railway lines were designed by the various powers to delimit spheres of interest, or meet the urgent strategic requirements of the Asiatic military situation. Some were designed to divert the trade of China to ports outside the jurisdiction of the Chinese government, and so build up foreign interests at the expense of the nation which paid the bills. China had nothing whatever to say in the matter. The lines were selected, the terms dictated, and her representatives affixed their signatures on the dotted line. The pendulum has swung the other way. The contracts cannot be carried out under these original terms.

The consortium has absorbed these old contracts. The object of this combination of international bankers is to strengthen the Central Chinese government, eliminate the spheres of political and commercial interest, and restore China's sovereignty. The consortium is an offshoot of the league of nations, an instrument to give effect to its provisions. We must assume that it is honest and the high ideals underlying its organization are to be carried into effect. We must accept as a basic principle that all the political, strategical and special commercial interests in these old contracts and concessions have disappeared, and they can now be treated as purely business propositions. In other words, the spheres of interest have disappeared, and the powers concerned now view these contracts from the sole standpoint of developing and strengthening China. If this is true, then it should make no difference where railways are constructed in China, providing they develop the country and furnish a suitable security to the bondholders. We hold these principles to be self-evident.

The consortium agreement provides for pooling in a common pot all existing and future loan agreements guaranteed by the central and provincial governments of China. The only exception relates to existing agreements upon which it can be shown substantial progress has been made. Into the common pot the four groups have pooled: the Hukwang, Reorganization, Currency Reform, Industrial Development, Pukow-Sinyang, Nanking-Hunan, Jehol-Taonan, Tsinan-Shuntehfu, Kaomi-Hsuchow, Chinchow-Aigun, Siems-Carey, Grand Canal, Continental and Commercial Trust and the Pacific Development loans. The Belgian group was offered a one-ninth participation to include their holdings in the pool. The independent French group, headed by the Banque Industrielle de Chine, was excluded through the objections originally raised at the Paris meeting by the official French group. It is hoped, however, that a way will be found to bring this important institution into the consortium. The Pauling contract was not officially included in the pool, though it is understood that this firm is quite willing to join the combination. In other words, the official pool is at present limited to the holdings of the official groups, the independent French, British and Japanese institutions being still on the outside. In view of the fact that the most important agreements cover the financing and construction of railways, the main purpose of the consortium is to find some equitable basis for negotiating a new understanding to carry out their compromises. In effect, the policy of the consortium must be a railway policy. It will stand or fall on this issue.

The consortium agreement, provides amongst other things, that it shall remain in force for the period of five years, but a majority, or, three of the four powers concerned, can terminate the agreement at any time. The American government has emphasized in many public statements that the main object of the consortium is to eliminate the spheres of influence, restore China's sovereignty and generally strengthen the position of the central Chinese government. This sentiment has been strongly supported by the British government and by Sir Charles Addis, the head of the British group. Once the Japanese were convinced that their vital interests in Manchuria were not to be singled out for attack, they also cordially accepted these sound principles, and are now equally earnest in their desire to find a practical plan that will give effect to these worthy ends. In accepting the aims underlying the American invitation, the Japanese group has given its whole-hearted support to any plan deemed best by the American group, and loyally refrained from questioning or interfering with the policy laid down by Mr. Lamont. As a matter of fact, however, the Japanese entertain certain views as to how the consortium can be made a success, but are loath to express themselves for fear of being misinterpreted and accused of interfering with the American program.

Mr. Stevens, the representative of the American group, has arrived in China and given out several important statements concerning the object of the consortium and the conditions upon which loans will be made to China. But up to the present, no

statement has been forthcoming which would indicate that the consortium has any set policy or program for placing into execution its widely advertised plan to strengthen the central Chinese government by the restoration of its sovereignty. The consortium holds that the resumption of railway construction in China is of first importance, and is willing to enter into a new arrangement with the Chinese government, along certain lines, that will bring this about. It has very firm ideas as to how this should be done, and on the whole these are advantageous to China. But Mr. Stevens has not as yet opened negotiations for railway construction. In fact, there is every indication that a serious deadlock has been created, which may result in defeating the objects of the consortium. It would appear that Mr. Stevens is waiting for the Chinese to make the first advances, while the latter have openly stated that they will never ask the consortium for a loan, basing this objection to the fear that their administrative independence will be further impaired in terms for supervision over the expenditure of the loans. The situation is not reassuring. In effect, it may be assumed that the way of the consortium, although paved with the best intentions, is liable to lead to a prolonged stalemate, during which time events may well arise that may hasten its dissolution.

The situation is therefore fraught with great danger. Valuable time is being wasted. The higher interests of China and the Chinese people demand some practical solution to their transportation problems at the hands of the powers who have complicated the situation by restricting their sovereign rights in the construction of much needed railways. The highest interests of the powers collectively, and especially those of America and Japan, call loudly for an equitable and harmonious program that will permit them to work together and give effect to the sound ideals underlying the consortium. The time has arrived, therefore, to speak frankly and seriously, in order that a way may be indicated to bring about the full restoration of China's sovereignty over her transportations rights pooled through the medium of the consortium. I have discussed this phase of the problem with many Japanese officials and financiers, and without a dissenting voice they have signified their readiness to co-operate in any honest program that will bring peace and stability to their big neighbor and put an end forever to international competition in railway concessions, by restoring as far as possible, China's sovereignty in these matters.

In discussing these problems with the heads of the Japanese group, I discovered a willingness on their part to go even further than the Americans in giving practical expression to the consortium idea of restoring China's full authority over her transportation system. It was pointed out that unless some plan was devised to bring this about there was grave danger in the event of the consortium being abolished, of a return to the doctrine of the closed sphere. The situation from this angle is this. All the old railway agreements with their preferential conditions, together with all special rights and options that go to make up the doctrine of the closed sphere, have been pooled under the new consortium. The special rights formerly held by individual nations or their nationals are now internationalized under the consortium. As far as China is concerned there is no difference in the situation. The special rights of the individual powers have simply been transferred to an international holding company enjoying a monopoly of support from the interested governments. The danger in this situation arises from the possibility of a dissolution of the consortium as provided for in the agreement. If, by any chance, conditions arise which might necessitate the cancellation of the agreement, then the contracts, concessions, options and special rights now held in the common pool, would automatically revert to their original holders, and China would once more be divided into spheres of special interest, with America on the outside. It was clearly seen that under such conditions, American financiers seeking an outlet for their activities, would sooner or later precipitate a crisis in the interpretation of the "open door" doctrine. In view of the past tendency of Chinese officials working in close harmony with American firms (whose business in China has been built up on an anti-Japanese basis) to seek new issues by entering into contracts which conflict with rights held by Japan, the Japanese financiers are unanimous in their opinion that any plan that would forever eliminate this menace to the continuation of friendly relations and perpetuate the life of the consortium would receive their hearty approval.

Having made this point clear, the discussion naturally turned on how this much to be desired solution could be arrived at. I found that the best Japanese minds did not differ materially from the ideas of prominent Chinese officials on this subject, and all that was needed was an appeal to public opinion for a square deal to China to help point the way to a solution. If we accept the undoubted fact that the consortium is honest and sincerely desirous of restoring China's sovereignty and strengthening the central government, and that the construction of her railways can now be approached from a purely business viewpoint, then it is clear that it should make no difference to any of the powers where these railways are constructed. If we accept the fact that many of the pooled lines were originally political in character, and that their construction cannot be carried out under the terms and conditions of the contracts, then it is also clear that they should be cancelled or surrendered. On the other hand, China needs many thousands of miles of new railways to develop her resources for the benefit of the world and bring internal political stability to the nation. It is also clear that to do this successfully, China should be permitted to have her own national system of railways designed with a single view to her own requirements.

Instead, therefore, of pooling all these old political rights and options, with the danger to world peace involved in a dissolution of the consortium and a return to the closed door policy, it would seem that the solution lies in surrendering to the Chinese government these old rights, on the condition that an approved national system of railways be designed, and an equal mileage in this system exchanged for the surrendered lines. It is clear that once these old political rights and privileges are surrendered and the secret and other agreements between the powers delimiting spheres of railway activity in China cancelled, China's sovereignty is restored. The slate is wiped clean and the door opened to a new era for the consortium to function without a hitch in financing and supervising the construction and operation of the new national system designed for China's exclusive benefit. Under such conditions, the consortium can enter the field on a strictly business basis, and if, through any misfortune, it should be dissolved, the menace to world peace involved in a return to the closed sphere doctrine will have disappeared. This, in effect, was the plan approved by the members of the Chinese technical commission at Paris, as embodying as near as possible, the ideas of their government and people in treating with the consortium. That the scheme was not accepted by the consortium at the time is due largely to the fact that other matters were brought in to indicate how the lines could be constructed.

In discussing this phase of the problem with Japanese financiers, I gathered the impression that they were in hearty accord with any fair, honorable and practical solution, and should the other powers be willing to accept such a program, I have reason to believe that they will loyally contribute their part in making China's sovereignty an immediate and accomplished fact and carry their share of the financial burden to make it a success. It is therefore left to THE FAR EASTERN REVIEW to propose this solution to the existing deadlock between the Chinese government and the consortium. If, as Sir Charles Addis assures us (and this is self-evident), that the consortium policy must be a railway policy, then the question of administrative loans and advances for other purposes can be temporarily pigeon-holed and every effort concentrated on finding an amicable and honorable basis for negotiating terms and conditions for the construction of railways. It is needless to point out that any plan that will recognize and restore China's sovereignty must meet with the immediate and cordial endorsement of the Chinese people, irrespective of party, and the central government will be enabled to proceed with negotia-

tions with the assurance that the sentiment of the country is with it. It is also superfluous to add, that public opinion throughout the world, will support such a practical expression to the much advertised altruistic ideas which gave birth to the consortium.

The railway problem of China stands upon its own bottom. It bears no relation to administrative, reorganization or disbandment loans with their implied specific security and foreign supervision over the collection of revenues. The only possible measure of Chinese opposition that could disturb the harmony of negotiations would arise in determining control terms over the operation of the completed lines. Here the consortium is strengthened by its possession of the Siems-Carey contracts which provide for adequate foreign supervision over the traffic in addition to a twenty per cent. participation in the profits of the lines. There is little doubt that the Chinese people will bring strong pressure to bear upon their government to make any fair concession in the matter of traffic control and other adequate guarantees for the bondholders, in return for a cancellation or modification of this last provision, so the outlook for a successful termination to such negotiations is far from being pessimistic.

If such a plan meets with the approval of the Chinese people and reflects the opinion of its leading railway officials, and is not out of harmony with the ideas of Japan, then an analysis of the situation leads us to add that the American contractor (Siems-Carey Company) holding a contract for 1,100 miles of lines with an option on an additional 1,500 miles, would place no opposition to the scheme as this company is interested solely in building railways, and does not particularly care where they are built as long as they promise to become a safe investment for the bondholders. The same can be said of Pauling & Company, the British contractors who hold the right to construct the 1000 mile, Shasi-Singyfu line. The railway rights held by the official French group are confined to its participation in the Hukwang contract, and a forty-five per cent. interest in the Chinese Central Railways, Ltd, the official British institution for constructing railways north of the Yangtze River. There are no essential politics in their holdings at this time. The French group is emphatic in desiring an abolition of the sphere of interest doctrine, which has confined its activities to the unattractive possibility of building lines in Kwangsi and Yunnan. This brings us down to the contracts, options, etc., held by the other British official group, the British & Chinese Corporation, Limited. In view of the repeated declarations of Sir Charles Addis (the head of this group), of the necessity of replacing international competition with international co-operation, and his recent utterances about the railway policy of the consortium, it would seem that no serious objection could reasonably be raised to oppose the above plan of surrendering all the pooled railway rights and contracts to the Chinese government in exchange for an equal mileage or participation in a new system of national railways designed exclusively for the advancement of Chiua's special interests.

The league of nations may survive in some form or other, despite the adverse verdict of the American people registered at the polls last November. Great Britain, France and Japan are heartily in favor of its provisions and seem intent upon preserving its usefulness under the original charter. This means that they unqualifiedly subscribe to its provisions which include the abrogation of all treaties that in any way infringe the sovereignty of the member states. Sooner or later, therefore, the time must arrive when all infringements upon China's sovereignty embraced within these secret and other understandings between the powers delimiting their respective spheres of railway activities in China, together with all similar agreements signed by China, will have to be cancelled. Now, Mr. Lamont, chairman of the consortium, recently stated in an address before the University Club in New York, that the Consortium was like a Far Eastern league of nations working in with New China to maintain the peace of the Far East and thus promoting the peace of the world.

Just so. If that is the case, then the first step of the consortium should be to live up to the ideals of the parent league and apply its principles to a member state without awaiting formal action to cancel these instruments which infringe upon China's sovereignty and circumscribe her liberty of action in constructing necessary railways. If the consortium is to become in fact a Far Eastern league of nations, China must enter the league on a basis of full equality. Once the assurance is given that China's sovereign rights are to be safeguarded and that her own national system of railways is to be made the basis of future consortium negotiations, a grateful people will get behind and support a strengthened central government in any equitable plan that may be negotiated for their financing.

Mr. Lamont voices the unanimous sentiment of the business element of the United States. It wants peace in the Pacific, and to this end it demands the elimination of all possible sources of friction with Japan. Peace in the Pacific and the maintenance of the "open door" in China will hinge largely upon the policy of the consortium. If it fails to function, and conditions in China revert once more to the closed sphere, with America on the outside insisting upon ignoring the rights acquired by others, the consequences will fall squarely upon the shoulders of those responsible for the birth and defeat of the consortium. The Japanese financiers, harmonizing with the ideas of the Chinese, have pointed one way towards permanent peace. We commend the solution to the very careful consideration of the other consortium powers.

G. B. R.

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The End of the Road

Which Way! President Harding?

WE realized at the Paris Conference, that if peace between Japan and America was to be maintained, Japan's story would have to be told. We also clearly recognized that only by a full, frank, and harmonious co-operation between the United States and Japan, through the consortium, could China be placed upon her feet and the spheres of influence eliminated. We determined to tell the story. It has been told. In this number of THE FAR EASTERN REVIEW we reprint from "Asia" the testimony of the late Willard Straight concerning his activities in Manchuria. It needs no comment. It tells us in straightforward language that the origin of American policy in that region is based upon the secret plans of the late Mr. Harriman to compel Japan to sell the South Manchuria Railway so it could be included in his world girdling transportation dream. There was no vital principle at stake, no legitimate American interest involved, only the cold, calculated determination of a railway manipulator to destroy the value of a competing line, in order to force acceptance of his terms. Mr. Straight's letters reveal that Mr. Harriman's business associates were maintained in complete ignorance of his plans, thus exonerating Kuhn, Loeb & Company and the American group, of being a party to this intrigue to compel Japan to forego the fruits of her victory over Russia. Mr. Straight and Mr. Harriman worked together and induced the state department to support them in order "to uphold the doctrine of the Open Door". Unfortunately for America, for Japan, and the peace of the Pacific, our state department made their operations the basis of its diplomacy in Manchuria, and at all times since has steadily insisted upon the recognition of our right to the Chinchow-Aigun railway contract. America was thus brought into the middle of the greatest problem that confronts the world in Asia.

Almost simultaneous with the publication of Mr. Straight's story, comes the revelations of Count Witte in "World's Work," corroborating the existence of the secret Russo-Chinese alliance directed against Japan. The disclosure of this alliance at Paris completely modified the entire Far Eastern question. Count Witte's evidence at this time completely supports THE FAR EASTERN REVIEW'S presentation of the basic facts in the controversy, and together with the story of Mr. Willard Straight, sums

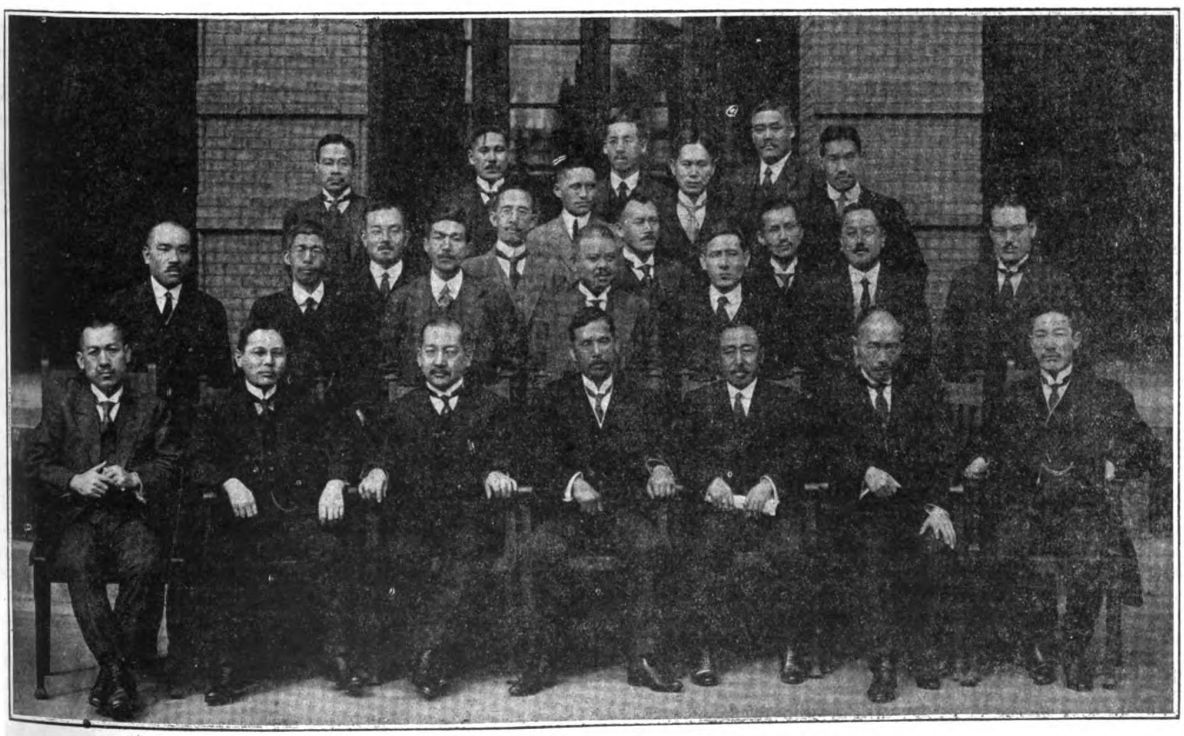
up the case for Japan in Manchuria and Mongolia. We have come to the end of the road. Their evidence will stand. The American people will refuse to get excited over an issue which had its inception in the brain of the most audacious railway and stock exchange manipulator our country has produced.

Japan's case is exceptionally strong. It has, perhaps, been somewhat weakened by the attitude of her military in Siberia, Chientao and elsewhere. Notwithstanding this, we believe that there is a meeting ground, where these issues which affect the peace of the Pacific, of the world, can be amicably adjusted to the satisfaction of all interested nations. There is only one way to do this, the manly and honorable way, the American way. Let us gather around the conference table and settle these questions amicably and with justice to all. *Which way do we turn, Mr. President?*

* * *

Japanese Merchants in China

COMMENTING upon an important event of the month, the first conference of Japanese chambers of commerce in China held during February in Shanghai, the *Celestial Empire* says this "is a matter of more than passing interest, even if only the fact is considered that it is the first time Japanese merchants from all over China have met together to consider matters in which they are more particularly interested. But besides the fact that the conference marks the inauguration of a new association of foreign merchants which will have for its object the expansion of foreign trade in China, the proceedings appear to have been highly interesting in themselves. The reports published, of course, are all from semi-official sources, but it is usual in China for such conferences to be held in private, and in that respect the conference followed the example of the British chambers of commerce, and in any case there could have been no reports published in the foreign papers in Shanghai, even although the meetings had been open to the press, if they had not been supplied by those interested. From the resolutions proposed and adopted, and the brief references to the discussions which are published, it appears that the conference was above all things eminently practical. The resolutions passed have generally the good of trade for their object, and most would tend to promote the prosperity of China as well as the interests of foreign commerce. Of course, the extension of Japanese influence is above all desired by Japanese merchants in China, but it is by legitimate means that it was proposed that that influence should be extended. It is interesting to note that the methods of the Japanese government were fairly frankly criticised by the proposer of the first resolution. The discord that has existed between China and Japan and the economic boycott of Japan which prevailed in China for some time is laid at the door of Japan's militaristic policy. The speaker recommended that the relations between China and Japan should on the contrary have a social basis. The conference in several resolutions affirmed its adherence to the principle of the open door, and judging from the resolutions passed Japanese merchants in China, as represented by their chambers of commerce, are anxious to co-operate with other merchants in promoting the interests of trade in China and concurrently the prosperity of China. There can be no doubt that such conferences tend to clear the international atmosphere and to promote good understandings, and they are therefore to be welcomed. Matters which are discussed even semi-publicly are likely to be properly conducted. Mr. Yamasaki, the Japanese consul-general in Shanghai, who attended the meetings as an observer, indicated in a speech at the close of the proceedings that the Japanese government is interested in the conference and would give weight to the recommendations.



JAPANESE TRADE LEADERS IN CHINA

1st Row from the right No. 3—Mr. M. Nodaira (Chairman of the Conference and Chairman of Shanghai Chamber); No. 4—Mr. Y. Aioi of Dairen Chamber; No. 5—Mr. Osawa of Tientsin Chamber, etc.

Anglo-Chinese Trade

WHILE so much has been said in the last twenty years about the importance of foreign markets, it is strange that so little should have been done to secure and to expand the immense potential demand for European manufactures which is offered by China. The Chinese were a civilized race when our own ancestors wore skins and paint; they are remarkably law-abiding and industrious; in their own way, too, they are very religious, and although their ancestor-worship is not what we mean by religion, it has the advantage that, while a man may come to disbelieve in the existence of any particular God, he cannot bring himself to think that he had no great-grandfathers. Until recently it must be confessed that the western powers, to whom Japan and the United States must be added, have behaved very badly in China: they treated the Celestial Empire as "the sick man of Asia," just as if it had been a geographical area governed by brigands like the Ottoman Empire.

One of the most hopeful features is the formation of a new body called "The China Consortium," composed of bankers representing England, France, Japan, and the United States. International arrangements have been made before now with the object of getting things done in China, but there was not much pretence that the organisers had Chinese interests at heart, or were doing anything but pegging out claims for their respective countries. The new consortium has been arranged by Mr. T. W. Lamont on behalf of America and Sir Charles Addis, of the Hongkong and Shanghai Bank, on behalf of England. Speaking on the subject in New York, Sir Charles declared that the principle upon which the new China consortium had been formed was "the substitution of international co-operation in China for international competition." An English man! He is a liar

The new arrangement is the result of protracted negotiations, and marks, we must hope, the victory of disinterestedness over territorial ambitions. During the Peace Conference bankers representing the four powers met at Paris, at the suggestion of the United States governments, to negotiate a new consortium. Unfortunately, Japan had ambitions of her own, and the foreign office at Tokyo announced that Japan would only enter the consortium with certain "reservations"; in particular, it demanded that Mongolia, Manchuria, and Shantung should be exempt from the operations of the consortium. Washington refused the demand, but the Japanese government appears to have made out that the powers had assented to its reservations. Mr. Lamont visited Japan and China on purpose to induce the Japanese foreign office to withdraw its reservations; in spite of many obstacles he succeeded, and is now able to announce that the consortium is to be "an international partnership for the purpose of assisting China in the development of her great public enterprises." It is only natural that the United States should take a foremost part in these negotiations, for, as the New York *Nation* says, "not only is American honor at stake, not only is the question of peace or war in the East involved in the terms of agreement, but American money must stand behind any loan to China. Great Britain and France, and Japan, too, can lend money to China only by first borrowing it from the United States."

Sir Charles Addis, in a second speech made at the annual dinner of the China Association, explained that one good point about the new arrangement was that it puts an end to the mischievous and dangerous system of spheres of special interest in China. The four powers have given up all individual concessions and options and have merged them in the common pool of the consortium. Moreover, they have undertaken not to establish any separate rates of interest in any future business which may come to them. Unlike the American writer, who seems to have an invincible distrust of the Island Empire, Sir Charles went out of his way to bear testimony to the loyal support of his Japanese colleague during the negotiation, and he is sure that Japan "will carry out the letter and spirit of the new agreement."

Modern trade is almost impossible without transport, and China is very badly served by railways, having, in fact, less than 6,000 miles in an area which is one-sixth larger than the United States. These railways, however, were earning a profit of 10 per cent. on the capital. Under the new arrangements all contracts for railways, material, and supplies will be open for bidding to the whole world. Hitherto, Sir Charles Addis says, railways in China have been constructed in sections by different nationalities; "in future railway construction will be by an international board." If the new China consortium can live up to its declarations a new era should open for the countrymen of Confucius, and it is to be hoped that English exporters will take full advantage of an almost illimitable market.—*The Iron and Coal Trade Review*, London.

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Complying with Railway Loan Agreements

THE time cannot be long delayed when American manufacturers of railway materials must again reckon with European competition in supplying the requirements of Chinese railways. Upon learning that the ministry of communications intended to purchase rolling stock from the proceeds of the recent loan for that purpose, the British and Chinese Corporation invited the attention of the ministry to the terms of its railway loan agreements which gives it the option for purchasing such materials. These agreements which cover the Tientsin-Pukow, Shanghai-Nanking and Shanghai-Hangchow-Ningpo lines also provide that British materials will be given the preference. The minister of communications, in his reply, is said to have recognized these options and rights.

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Japan's Foreign Trade for 1920

JAPAN'S exports and imports during last year amounted in value to Y. 1,948,415,000 and Y. 2,335,691,000 respectively, resulting in an excess of imports over exports to the amount of Y. 387,276,000. Compared with the preceding year, the figures show a decrease of Y. 150,397,000 in exports, but an increase of Y. 163,446,000 in imports. The exports from Japan of gold and silver bullion during last year amounted to Y. 3,897,000, while imports reached Y. 404,663,000, the figures showing an increase of Y. 77,186,000.

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Japan and India's Commerce

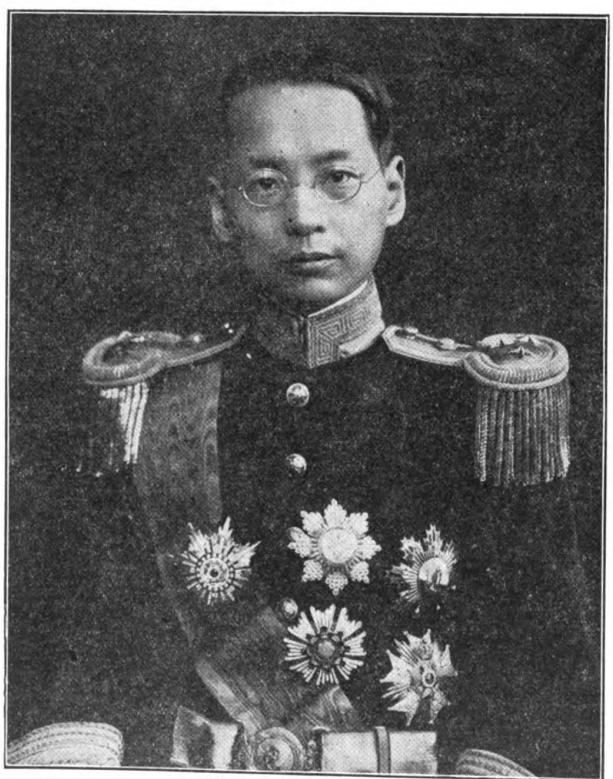
WE are hearing a good deal about Japanese competition with Great Britain in India. We always do when business is quiet. In fact when the cotton trade is depressed our competitors are always represented as on the point of ousting us altogether from our great Eastern dominion in all branches of commerce. Perhaps the view is excusable in the circumstances. When we are doing little, what our rivals are doing necessarily bulks larger in the public eye. During the war Japan's imports of all kinds into India and her exports from India went up largely. In imports her percentage of the total rose from 2.7 per cent. in 1913 to 10 per cent. in 1919. But 1920 is credited in the latest statistics with only 9 per cent. In exports the situation proves to be very similar—1913 10 per cent., 1919 13 per cent., 1920 11 per cent.

These figures, which refer to quantities, not values, do not indicate any great advance by Japan in her commerce with India at the expense of Great Britain. In fact they show, on the other hand, that whatever gains were made by Japan during the war

The Brains of the Chiaotungpu

THE most important official position in the Peking government is the one which controls the exchequer. Next to the minister of finance, comes the portfolio of communications, which brings in a steady and ever increasing income from the operation of railways, posts and telegraphs. The minister who directs the Chiaotungpu holds the most enviable position in China, and, fortunately for the nation, it has at last an executive in charge of this department who understands his business. Schooled under Sheng Kung-pao and Liang Shih-yi, the new minister Mr. Yeh Kung-cho, is without question the most brilliant and capable Chinese administrator who has been called upon to direct the operation of China's national railway system.

In urging a Square Deal for China in restoring the sovereignty of the government over its lost railway rights, we are simply reflecting the views of this expert in the intricacies of the international politics surrounding the transportation problem of his country. We collaborated with Mr. Yeh in Paris in drafting a plan that it was hoped might be acceptable to the consortium and which might serve as the basis of negotiations without loss to China's dignity. In 1914, we also co-operated with Mr. Yeh in designing a national system of railways for China (which was subsequently awarded the grand prize for excellence) and in organizing an international corporation designed to finance and construct the lines. Unlike many of his predecessors, Minister Yeh has been animated by a single desire to benefit his country and restore as far as possible China's absolute control over her transportation system.



Hon. YEH KUNG-CHO

China's Minister of Communications. Schooled under Sheng Kung-pao and Liang Shih-yi. China's foremost railway administrators. Mr. Yeh stands to-day as the best equipped expert on China's railway problems.

In years to come when the story of China's struggle for independence can be written by an impartial historian, the name of Yeh Kung-cho will stand out prominently as the one Chinese railway administrator, who, at all times, did his utmost to uphold the dignity and preserve the sovereignty of his government in eliminating spheres of political and commercial influence carved out by foreign railway concessions and contracts. If the consortium is to help China by creating a strong central government it will be greatly assisted towards this worthy end by giving careful consideration to the views of Minister Yeh Kung-cho, the Brains of the Chiaotungpu,.

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Vanderlip's Diagnosis

FEW indeed are the Americans who correctly diagnose the basic causes of unrest in the Orient. Frank A. Vanderlip stands out as one of the very few who has applied his own brains to a profound study of the existing problems in this part of the world. Unswayed by propaganda and special pleading, Mr. Vanderlip has placed his finger on the root of the Far Eastern and Pacific problem. Speaking recently at the luncheon of the Radcliffe Club held at the Hotel Astor in New York he declared that it would be better to build a railroad in China than to make futile efforts to save the 10,000,000 lives perishing there now through famine. He maintains that the balance of trade is the most important issue of the world to-day and that no league of nations or any substitute for it could relieve present conditions.

"Congestion of population will always breed war," said Mr. Vanderlip. "It is because of congestion that all nations endeavor to branch out. That is why Austria is starving to-day. It is this same congestion that is costing the lives of millions in China. And when I say that I would rather build a railroad in China than save the 10,000,000 lives now being lost there, it is not from lack of sympathy for the situation there but because of a greater sympathy for the future generations. We must all be guided by intelligent self-interest—that is, interest for our people and an eagerness to progress, and a league of nations or a similar document would not encourage such progress. We must have an incentive for progress, and competition with other nations is the greatest and in fact the only incentive in trade relations.

"During the last seventy years the population of the world has increased 700,000,000. This increase of 1 per cent. a year is bound to bring about great economic problems. It has made it necessary for people to specialize and it has caused congestion in certain districts. In the case of China the population has increased so much more rapidly than the nation has progressed that they now find themselves in the deplorable condition of having millions of their people without food. Even if we could gather enough food for this vast number we could not get it to them in time to save their lives, for they have such inadequate means of transportation. Therefore, since we are unable to help these suffering people materially, it would be far wiser for us to centre our attention toward building railroads for them, thereby preventing a recurrence of such a condition and enabling the future generations to carry on trade with other countries."

The Reason is Plain

ACCORDING to the Tokyo *Yamato*, "German residents in Japan are steadily increasing in number. As compared with pre-war days, the number has been practically doubled. Most of the newcomers are employed by Japanese firms as engineers, or in some technical capacity." It would seem that the propaganda of Dr. Solf to use "German brains to develop Japanese industries" is bearing fruit. We have steadily condemned the movement which is turning Japan against America, and if Japan now calls upon Germany for technical advice and direction, American manufacturers will have only themselves to blame. Some day, Americans may have to hold an inquest into the causes which have brought about a loss of trade with their best Asiatic customer. The reason will be plain. They have been warned in time.

Engineering, Financial, Industrial and Commercial News

RAILWAYS, NEW LINES, SUPPLIES, ETC.

The Japanese Government Railway Program.—A new railway net program, announced by the government, extends over 6,000 miles, including lines already completed. It includes a new line from Hachioji, Tokyo prefecture, to Takasaki, Gumma prefecture, via Hanno, Saitama prefecture, and two new lines affecting Kanagawa prefecture. The last two comprise one from Osaki, near Tokyo to Matsuka, via Nagatsuda, and one from Yokosuka to Uraga.—Yokohama *Chamber of Commerce Journal.*

Dairen Imports Rails from U. S.—A cargo of one hundred pound rails for 30 miles, which the South Manchuria Railway Company ordered from the Carnegie Steel Works, has been landed at Dairen. The company intends to retrack the line with the heavier rails in place of the 60 or 80 pound rails now in use gradually, so as to enable the big locomotives to travel at their full speed.

Construction of the Changchow-Amoy Railway will be Resumed.—The gentry of Fukien province plan to resume construction and to complete the whole line of the Chongchow-Amoy Railway which was started twenty years ago. "The estimated cost is about $1,800,000, including expenses for erecting wharves, bridge-constructions and purchasing rolling-stock. The ministry of communications has approved the project and has donated $500,000 and will supply the balance in 8 per cent. Industrial Bonds issued by the ministry on the security of the surplus of profits on the Peking-Hankow Railway."—*Shun Pao.*

Loan Authorized for Indo-Chine Line.—The French chamber of deputies has passed a bill authorizing the government of Indio-China to issue a 6,000,000 piastres lottery loan, for the purpose of construction of the projected railway from the port of Dong-hoi (Annam) to Vinh-long (on the Mekong River, Lower Cochin-China). The bill is now before the senate.—French Wireless.

Bond Issue for Railway Construction, Japan.—The Japanese government is issuing ten million yen of Exchequer Bonds for railway construction and extension, expiring on June 1, 1925. The interest is five per cent.

Hsi-Kuang Plans.—The Chehkiang merchants plan to contruct the Hsi-Kuang railway so as to connect the two provinces of Chehkiang and Anhui in order to promote the silk and tea industries. The civil governor of Chehkiang (Shen Ching-chien) is to have a survey of the line made. The undertaking will cost about $3,000,000 which the Chehkiang merchants intend to subscribe.

Harbin - Blagoveschensk Line. — Manchurian merchants are raising $3,000,000 for the purpose of building a railway between Harbin and Blagoveschensk. They have requested the Chinese government to cancel the concession which was formerly granted to the Russo-Asiatic Bank. Details :—

(1) To nullify the railway agreement formerly concluded between the Chinese government and the Russo-Asiatic Bank with regard to the construction of the said Harbin-Heilungkiang Railway; (2) to issue Domestic Bonds to the extent of $6,000,000 to be shared equally by Fengtien, Heilungkiang and Kirin, for the establishment of the Harbin-Heilungkiang Bank; (3) to proceed with the preliminary construction work between Hulun and Hai Lan comprising an area of 200 *lis*, leaving the rest to be constructed at a future date when additional domestic bonds can be issued. Chinese press reports say that the Peking government approves this plan.

Pasha Extension of the S.-H.-N. Railway.—The Ningpo-Pasha branch of the Shanghai-Hangchow-Ningpo Railway 20 *li* further to Shar-poo is proposed. The plan of the Shanghai-Hangchow-Ningpo Railway board has been sanctioned by the ministry of communications.—*Shun Pao.*

New Japanese Railway.— Plans for building a railway between Matsumoto City and Kamitakara, Japan, a distance of forty miles, have materialised. After making a survey of the proposed permanent way, Mr. Isakai, engineer, has reached an understanding with the property owners.

Government Railway Line in Japan.—A government railway line between Hojo to Katsumura will probably be finished in 1926. The ten-mile construction between Hojo and Matsuda will be completed in April next. The line runs from Matsuda to Katsumara through Amatsu, Kominato and Chiba prefecture, a distance of 22 miles. The estimate for this line is Y.5,490,000.

Chinese General Wants to Build Railway.—General Feng Yu-hsiang has petitioned Peking to build a Yiencheng-Chowkou branch of the Peking-Hankow Railway in Honan. Yiencheng is situated on about the centre of that section of Peking-Hankow Railway traversing Honan, and the construction of an Yiencheng-Chowkou line is only to extend approximately 30 miles eastward from the trunk line.—*Sin Wan Pao.*

Perhaps, Perhaps Not!—Nearly half of the projected Chefoo-Weihsien line has been surveyed. It was recently planned to build a branch of this line from Dasintien to Tenchow, but as it would take too much time and expense to build this branch owing to the long distance through hilly countries, it is suggested that a trunk line should run from Weihsien via Wanghsien and Tengchow to Chefoo. This would shorten the way by nearly ten *li* less than it would take to build a branch.—*Sin Wan Pao.*

TRAMWAYS

New Japanese Tramway.—The construction of the new tram line in front of Tokyo Station, between Gofukubashi and Otamachi, has made considerable headway and will be opened early this month. The new service will be a great benefit to railroad passengers alighting at the station.

Electric Lines for Tokyo Suburb.—In view of the rapid increase of population in suburban district of Tokyo two new electric railway lines have been projected by influential business men. One of the projected lines will be laid between Nakashibuya and Otsuka, near Sugamo, its length extending for 10 miles. The other line will start at Shinjuku and reach the bank of the Tamagawa, the line covering 15 miles. Both lines will connect with the Yamate line of the government railway.

Osaka Suburban Electric Tramway.—At present electric tramways are running from Osaka City to Hanshin, Hankya, Hankai, Keihan, Taiki and Koya. A new suburban line will shortly be opened, probably in April, running between Umeda and Suida, under the management of the North Osaka Electric Tramway Co.

New Tramway Line, Saga.—Mr. Kixo Takashi, with some forty associates, plans to build a new tramway line in Saga prefecture, running between Isohayamachi an Ushizumachi, a distance of forty miles. The capital is Y.4,000,000, and permission is now being asked from the home department. An office will be opened at Isohayamachi, Saga, and a branch office at Tara Mura.

Amalgamation of Electric Tramway Companies in New Enterprise.—The Iyo Electric Tramcar Co. in Matsutama City, Yehime prefecture, will shortly amalgamate with the Innoshima and Kuse Electric Companies to supply electric power from Yehime prefecture to the mainland Sanyo-do across the Inland Sea.

The Shanghai Electric Construction Company, Limited.—With a view to bringing the capitalisation of the Company more nearly into accord with the value of its undertaking, the directors have decided to recommend the increase of the capital from £320,000 to £400,000 and the capitalisation of £80,000 of undivided profit by issuing as a bonus 8,000 fully paid shares of £10 each (giving one new share for every four shares now held). The new shares will not rank for dividends payable out of the profits of the year 1920.

Notices of meetings to consider the necessary resolutions will be issued in due course.

The directors have declared a second interim dividend of 6 per cent. (12/- per share) less income tax (payable on the 1st February) in respect of the year 1920. The final distribution which it is anticipated will be the same as last year will be announced in the usual course when the accounts for the year are ready for submission.

ELECTRIC LIGHTING, POWER, ETC.

Japanese Railway Electrification.—Investigation of hydro-electric possibilities is being made by engineers in Kanagawa, Shiguoka, Yamanashi, Nagano, Saitamo, Chiba, Ibaraki, Fukushima and Miyaji prefectures under the direction of the Japanese government board. This is in connection with the plans for the general electrification of the Japanese government railways. It is proposed to utilize possible power from the prefectures mentioned for the electrification of the Yokohama-Numatzu and Ofuna-Yakesuka railway lines, and also in the north-east neighborhood of Tokyo.

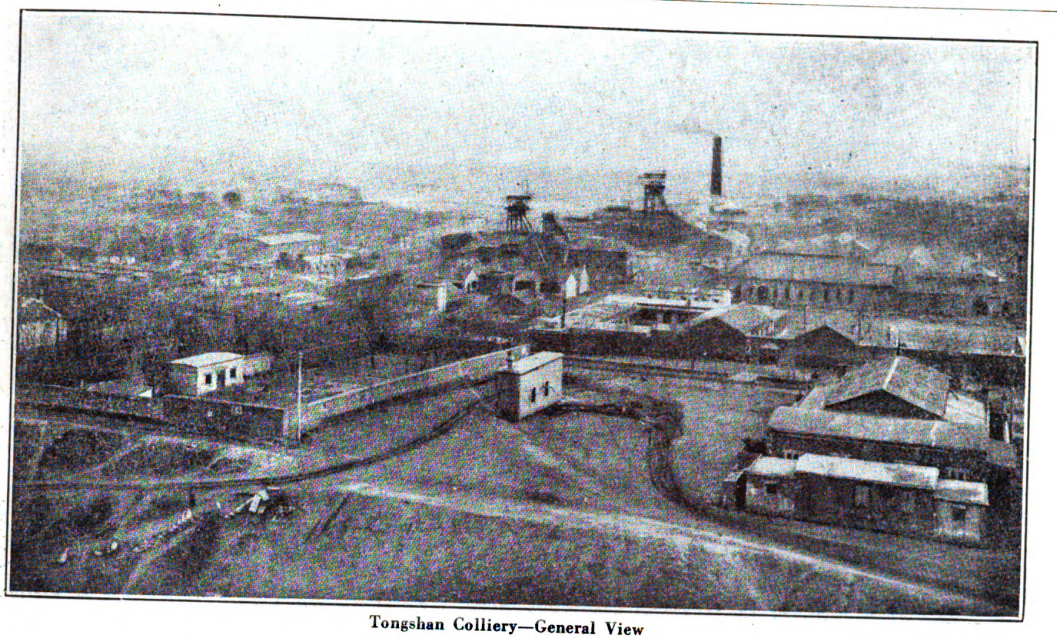
Osaka Electrical Estimates.—The preliminary estimates of Osaka's electrical department for the current year total Y.16,806,900, including Y.2,099,400 for reconstruction and rolling-stock.

Ujikawa's New President.—Mr. Kiyoshi Kimura, a director of the Osaka Shosen Kaisha, has been elected president of the Ujikawa Electric Co., succeeding the late Mr. Ukagawa.

New Power House at Shakako.—The South Manchuria Railway Company's Electricity Works started in the spring of 1919 on a site near the Shakako Waterworks the construction of a new power house. The installation of the boilers and other machinery has been completed recently, leaving the motors the only items to be installed. According to the present plan, the management intends to conduct a trial operation early in September, so as to open the new power house to work from October 1.

Tateyama Electric Co., Ltd., Tokyo.—This company was organized recently for the sale of electrical machinery. They have a capital of $1,000,000, quarter paid up, and their managing director is Mr. Teijino Yamamoto. Address: 3 Itchome, Sakuma-cho, Shiba-ku, Tokyo.

Kyushu Amalgamation.—The Kyushu Hydro-electric and the Kakata Electric Company have



Tongshan Colliery—General View

The Kailan Coal Mines

ON the 1st July, 1912, a working agreement was entered into by the Chinese Engineering and Mining Company, Limited, a British Company registered in London, and The Lanchow Mining Company, a purely Chinese Company operating under the laws of China. Under this agreement, the management in China of both concerns was handed over to the Kailan Mining Administration.

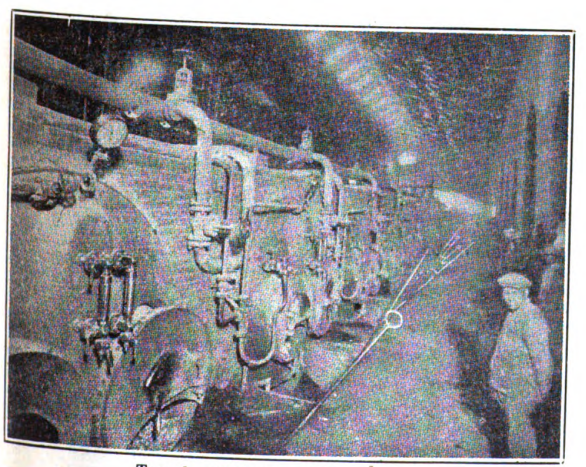
The Chinese Engineering and Mining Company, Limited was popularly known in China as the Kaiping Company, and the word "Kai-lan" is one of those *multum in parvo* words to which the Chinese language readily lends itself, made up of the first syllables of the words "Kai-ping" and "Lan-chow." All the mines and properties of the two Companies in China are now controlled by the Kailan Mining Administration.

The aggregate paid-up capital of the two Companies amounts to two millions sterling, whilst £1,200,000 has been raised on six per cent. first mortgage debentures ("Kailan bonds"), which are being redeemed at the rate of £24,000 per annum.

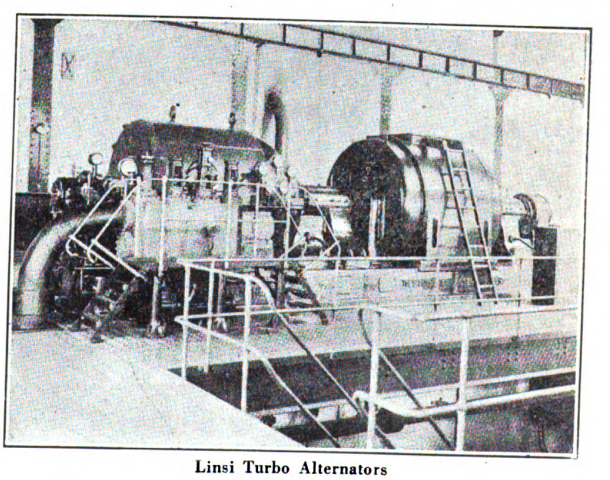
The head office of the Kailan Mining Administration is at Tientsin, where accommodation is at present found in temporary offices, pending the erection of new buildings.

SITUATION OF THE MINES.—The coal mining concession is situated in the Kaiping district of the province of Chihli, North China.

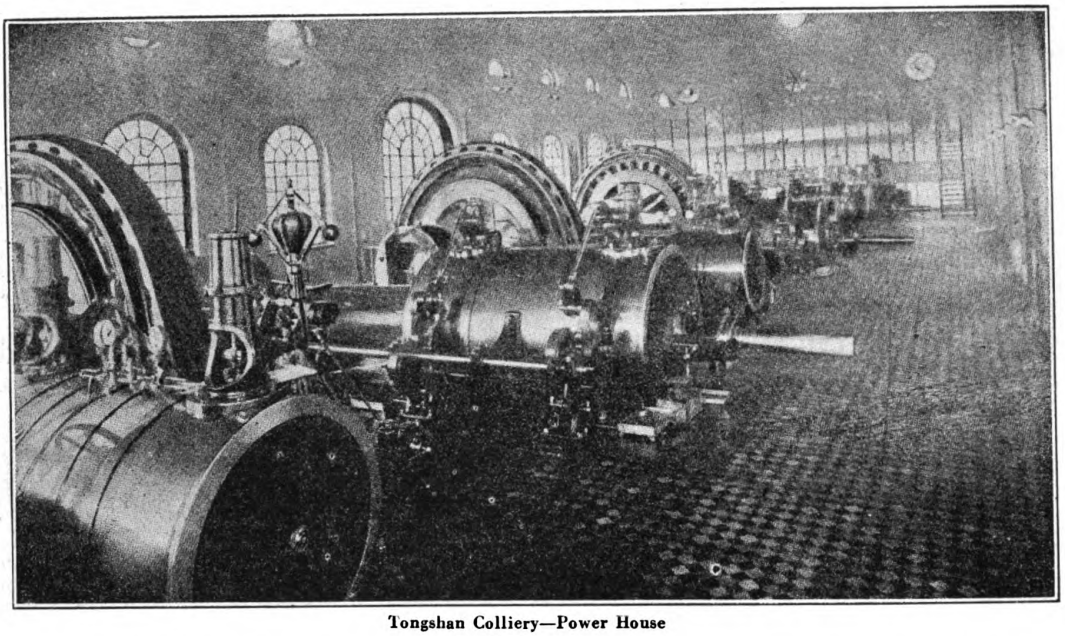
The mines are served by the Peking-Mukden Railway, which connects them with Tientsin, a great trade centre of over 800,000 inhabitants 81 miles away, and Peking, at a distance of 160 miles. To the river port of Tongku (for Taku Bar) and to the deep-water port of Chinwangtao the distances are 50 and 80 miles respectively.



Tongshan Colliery—Boiler House



Linsi Turbo Alternators



Tongshan Colliery—Power House

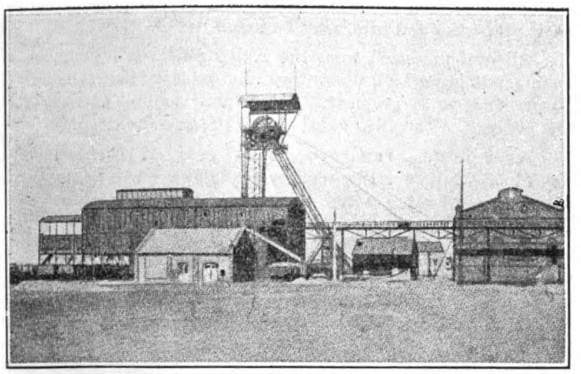
At Tongku the Administration has a large stacking yard and wharf for the bunkering of ships running to Tientsin or Taku Bar.

GEOLOGICAL.—The coal seams of the Kaiping basin form part of a synclinal formation of permo-carboniferous age, and are superimposed on a thick bed of carboniferous limestone, a characteristic peculiar to all coal deposits in China. The seams outcrop in the low hills lying to the north of the coalfield.

Thirteen different seams of coal have been proved. At the south-western end of the basin, the aggregate thickness of coal is 40 to 60 feet at Tongshan Colliery. Passing along the outcrops towards the north-east, the aggregate thickness at Machiako Colliery reaches 60 to 80 feet, and at Chaokochwang 80 to 90 feet, whence it decreases until at Linsi Colliery at the eastern extremity the thickness is again 40 to 50 feet. To the south and south-east no outcrops are visible, the seams being covered by an alluvial deposit, and this part of the field has not, so far, been exploited. At present, the known deposits of coal in these measures down to a depth of 3,000 feet are estimated to amount to over one thousand million tons.

The general cross section on page 224 shows what is presumed to be the approximate shape of the basin, only the edges of which have been exploited. Like all other coal measures, the several seams of the Kaiping basin must have originally been deposited in horizontal beds. During one of the several geological ages which have since passed, a great upheaval occurred which resulted in these measures assuming their present cup-shaped or synclinal form. Away to the west, there are indications that the edge of the cup was bent right over forming an anti-clinal. This

Chao Ko Chwang Colliery—General View



Ma Chia Ko Colliery—Pit Head Installation

great distortion of the strata has resulted in the seams in this part of the field beccming much broken and frequent faults are there encountered.

As often happens, beds of fireclay underlie the seams of coal. Fireclay is, in fact, presumed to be the soil in which the plants grew which time has converted into coal.

TONGSHAN COLLIERY.—In very early times, the natives of the Kaiping district contented themselves with quarrying the outcrop coal, and it is recorded that coal was mined by these primitive methods at Tongshan during the later years of the Ming dynasty, or some three hundred years ago. Modern methods of working were first introduced in 1878 at Tongshan Mine, this being the first occasion that foreign mining methods were adopted in China. Three large shafts of 14 to 16 feet diameter have now been carried to a maximum depth of fifteen hundred feet, and the capacity of the present equipment is fully 2,000 tons a day. The power station at Tongshan contains three alternators, each capable of developing 1,200 kilowatts. The principal engineering workshops have been established at this colliery, where all the heavier repair work, as well as a large amount of manufacture, are carried on. The shops are capable of turning out heavy castings, centrifugal pumps, ventilating fans, railway cars, heapstead gear, and generally all the minor engineering and fittng work required about the mines.

MA CHIA KO.—Ma Chia Ko Mine has a maximum daily capacity of 2,500 tons. The electrical equipment consists of one alternator of 1,100 kilowatts and one sub-station where current derived from Linsi Mine at 30,000 volts is transformed at 2,200 volts.

CHAO KO CHWANG.—Like Ma Chia Ko, the Chao Ko Chwang Colliery is comparatively new, and the workings have attained a maximum depth of only 900 feet, from which level coal is delivered through three shafts of 13 to 15 feet diameter. The output of this mine is, however, greater than that of any mine outside America. At present, 5,500 tons of coal a day are produced, and it is anticipated that very shortly the output will reach 6,500 tons daily.

There is no power station at Chao Ko Chwang, all the current required here being transmitted from Linsi.

LINSI COLLIERY.—The Linsi Mine is the main centre for production of power. Here is also situated the washing plant, where the lower grades of coal are cleaned.

The output of this mine is at present 3,500 tons a day, and will shortly be increased to 4,500 tons. The two vertical shafts of 14 and 15 feet diameter have been carried to a depth of a thousand feet.

The electrical equipment comprises two alternators of 1,200 kilowatts and two turbo-alternators of 3,000 kilowatts each. Two new turbo-alternators of 6,000 kilowatts each are now being installed in place of the small alternators. When these alterations have been completed, the capacity of this central station will be 18,000 kilowatts. For the distribution of this power to other mines two high-tension lines have been erected, so that the risk of any temporary breakage cutting off one of the mines from the source of power is reduced to a minimum.

The washing plant has been in service since 1915, and is capable of treating 100 to 150 tons of coal per hour, the quantity varying according to the grade of coal being washed.

GENERAL.—The equipment throughout the mines generally is of the most modern type, and will compare favorably with the largest and best equipped collieries of Europe or America. Electrical machinery is used throughout. There are over 200 electric motors and over 100 transformers in daily use. Practically the only service performed by steam engines direct is the actual raising of coal, and it is now proposed to replace five of the existing winding engines by large electrically-driven machines.

The boilers in use at the various power stations have an aggregate heating surface of over 60,000 feet and consume over 300 tons of coal daily. Mechanical stokers are in general use, and within a short time, hand stoking will be entirely abolished.

For surface transport and shunting, 15 locomotives are employed and 340 wagons, with a capacity of over 4,000 tons.

Haulage underground is effected by 1,100 mules and 6,000 coal tubs with a capacity of over 2,400 tons. Tramways for the haulage of coal underground constitute at each mine a very complete system, all main mule roads being double-tracked throughout their entire length, and in the older mines, extending from one end of the workings to the other for over 3½ miles. All main galleries are brick-lined throughout. The aggregate length of the tramways at present in use underground is more than 300 miles. The substitution of electric or benzine locomotives for underground traction in place of the mules at present in use is being considered.

The labor force employed amounts to 15,000 men underground and 7,000 on the surface, or a total of over 22,000 men.

Some idea of the mines' requirements of material may be given by the following figures of annual consumption :—

Clinker Bricks (Manufactured by the Administration and used mostly underground) ...	15,000,000
Dynamite	50 tons
Other Explosives	25 ,,
Mining Timber to Value of	$500,000
Structural Steel and Iron to Value of ...	$250,000

OUTPUT.—The maximum daily output from each mine under existing conditions is estimated to be :—

Tongshan	2,000 tons
Ma Chia Ko	2,500 ,,
Chao Ko Chwang	6,500 ,,
Linsi	3,500 ,,
Total for all mines	14,500 ,,

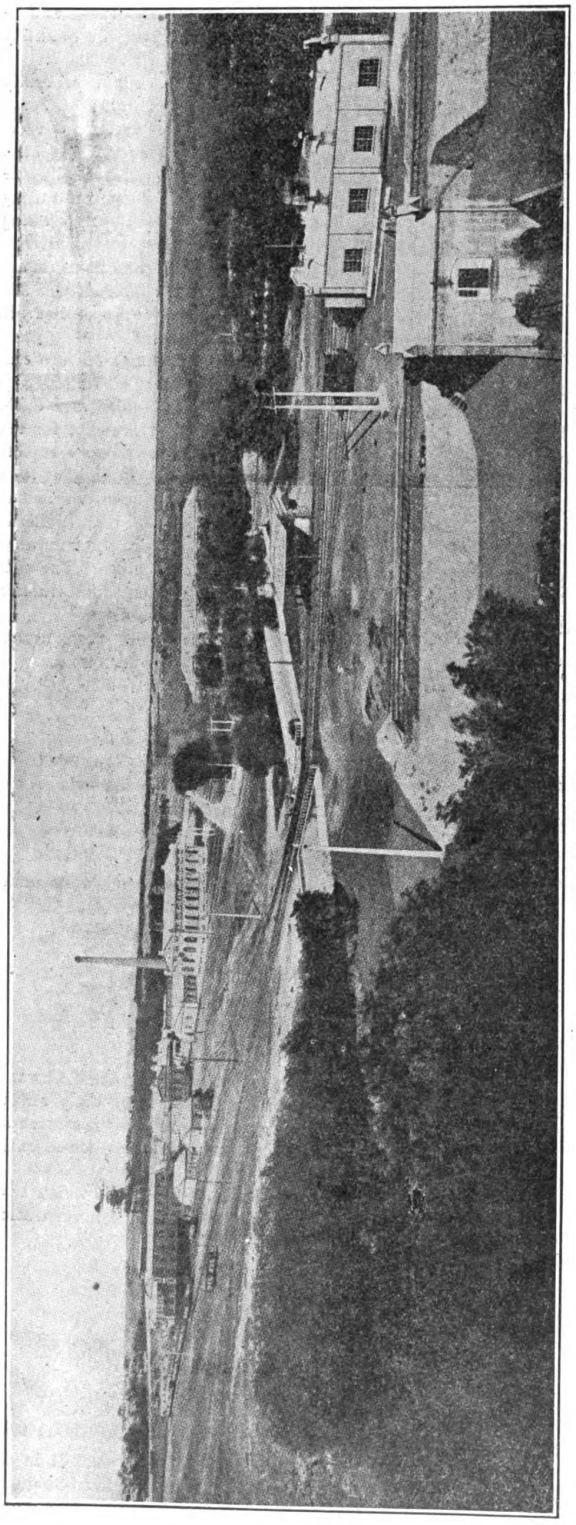
A new mine is now being equipped at Tang Chia Chwang, between Chao Ko Chwang and Linsi, designed for a daily output of from 4,000 to 5,000 tons. With this mine in full working order the output from the Administration's mines should considerably exceed 20,000 tons per diem.

The actual output of coal during the seven years which have passed since the formation of the Kailan Mining Administration is as follows :—

Year ending 30th June,	1913	1,700,000 tons
,, ,,	1914	2,500,000 ,,
,, ,,	1915	2,800,000 ,,
,, ,,	1916	2,900,000 ,,
,, ,,	1917	3,000,000 ,,
,, ,,	1918	3,250,000 ,,
,, ,,	1919	3,400,000 ,,

The production for the year 1919-20 will exceed 4,000,000 tons.

GRADES OF COAL AND THEIR USES.—Kaiping coal is in use throughout the Far East. Direct shipments are made to Shanghai and Yangtze River ports, Foochow, Amoy, Swatow, Hongkong, Canton, Bangkok, Singapore, Java, Manila, Japan, Korea, Manchuria, and all minor ports within this area. To possible users of



Machiako Colliery—General View

Kaiping coal, the following description of the principal grades, their properties and uses, may be found useful.

All coal produced from the Kaiping field is bituminous and coking. It has a high percentage of volatile matter, ranging from 24 per cent. to 37 per cent. The sulphur content averages about one per cent. The yield of ash varies in the different grades.

NAVY LUMP.—This is the highest grade of coal produced by the Administration; as the quantity available is limited, it is reserved almost exclusively for the Chinese, British, and foreign navies in the Far East.

LOCO. LUMP.—Locomotive lump is in great demand throughout the Far East, wherever a high-grade lump coal is required. It is carefully picked and hand-screened to compete with the highest grades of Japanese coal. It is especially used as a bunker coal and as a locomotive fuel. In order to reduce the cost, however, it is most frequently mixed with slack coal, either in a fixed proportion, or in the form of "run-of-mine." Amongst the users of this grade for marine boilers may be mentioned :—

The British Navy.
Messrs. Butterfield & Swire.
China Merchants Steam Navigation Company.
Chinese Maritime Customs.
Haiho Conservancy, Tientsin.
Messrs. Jardine, Matheson & Co., Ltd.
Whangpoo Conservancy, Shanghai.
Shanghai Dock and Engineering Co. Ltd.
New Engineering and Shipbuilding Works.

besides most of the ocean steamship companies visiting the Far East.

As a locomotive fuel it is used by the

Chinese Government Railways.
Korean Railways.
Japanese Government Railways.

FIVE-SEAM SLACK.—For over 40 years the merits of this grade of coal have been appreciated where a slack coal of high calorific value is essential. It is generally recognized as the best grade of slack coal available in the Far East.

NO. 1 SLACK AND NO. 2 SLACK.—These two grades are generally similar in character, the only difference being that No. 2 has a slightly greater proportion of ash. Both are eminently suited for use in boilers of all descriptions. Many of the largest plants in the Far East have been specially designed to secure the maximum economy when burning this slack coal.

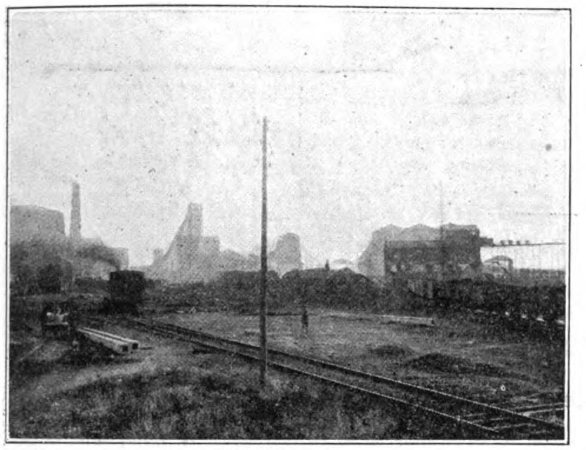
For such purposes as brick and lime burning, oil milling, *samshu* distilling, and such minor industries, No. 2 slack, on account of its lesser cost, is the more popular grade. For steam-raising purposes, a decision as to whether No. 5 seam, No. 1 slack or No. 2 slack is the more economical fuel must depend upon the boiler power available and the distance from the port of shipment to the place where the plant is located. It is obvious that at more distant points the use high-grade fuel becomes, relatively, more economical.

HOUSEHOLD LUMP.—This grade of lump coal is produced from the Linsi Mine, and though inferior to loco. lump as a steam-raising fuel by reason of its greater yield of ash, it is very suitable for household purposes, as it lights easily and burns freely.

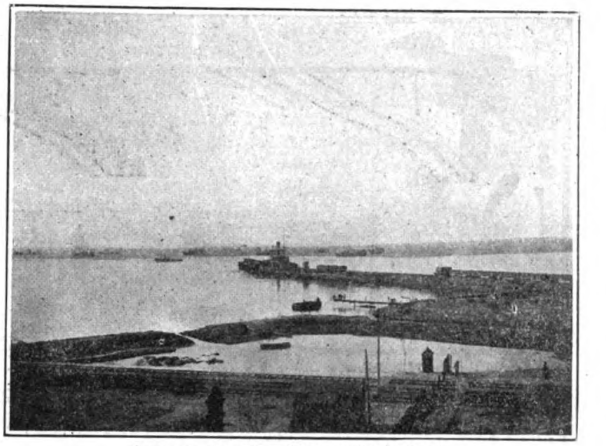
WASHED COAL.—Three grades of washed coal are now marketed. For certain purposes washed coal has an advantage, in that the variation of the ash percentage is very small, it being possible to control this with considerable accuracy during the process of manufacture.

WASHED NUTS are of such size that they pass through a 2-inch ring, but are retained by a $\frac{5}{8}$-inch mesh. These nuts are in great demand for bunkers and for steam-raising purposes generally, where shortage of boiler power necessitates working the boilers beyond their normal rate. At present the demand for this grade far exceeds the available supply.

WASHED SLACK OR DUST.—This grade is similar to the washed nuts in general composition and calorific value, and is



Linsi Colliery



Steamers Awaiting Turn to Load Coal

used in similar circumstances, i.e., in cases where it is necessary to get full valve from the boilers.

JAPAN DUST.—This is a special grade of washed coal for coke-making purposes. It is shipped in very large quantities to Japan, where it is converted into coke for use in blast furnaces.

FIRING OF KAIPING COALS.—It may be useful to include some detailed advice as to the best way of firing with Kaiping coals.

The coal chould be spread over the grate in a layer not exceeding four or five inches in thickness. Better results would follow the sprinkling of the fuel in a very light manner in layers of two inches.

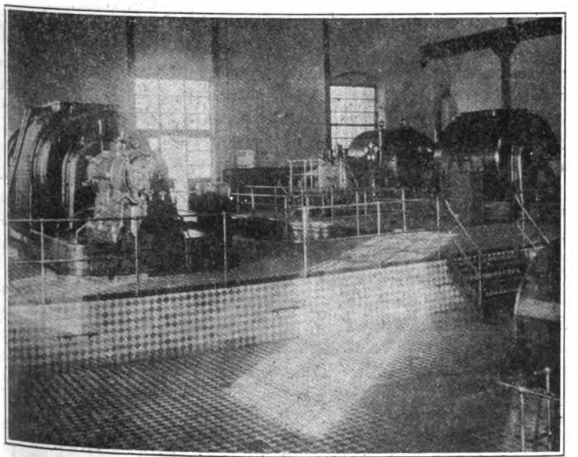
It cannot be too strongly emphasized that light firing is essential to the best results. Difficulty is often experienced in getting these directions carried out by Chinese stokers, who find it more convenient to load the furnaces heavily, in order to have longer rests. The coal should be laid on in small quantities at a time and be spread over a red fire. The frequent use of a slice bar is preferable to the use of a fire rake. A light T slice bar, as per sketch, has been found to give most satisfactory results, as furnace doors are not kept open so long when using the slice, preventing the entrance of cold air to the furnace.

Where tubular boilers, such as those manufactured by Messrs. Babcock and Wilcox, and mechanical stokers are in use, it is essential that the brick arch should be constructed in a suitable way if the best results are to be obtained. For a slow burning coal, such as Kaiping coal, ample space must be allowed for the flame to develop. In the diagram opposite, figure "A" shows a design of brick arch from which good results cannot be expected when using Kaiping coal. It is, however, a simple matter to alter the brick arch to the design shown in figure "B." The trifling cost of such an alteration will be amply repaid by the saving in fuel consumption. In one recent instance, the efficiency of a boiler using Kaiping slack was increased by twenty per cent. by a simple alteration of this kind.

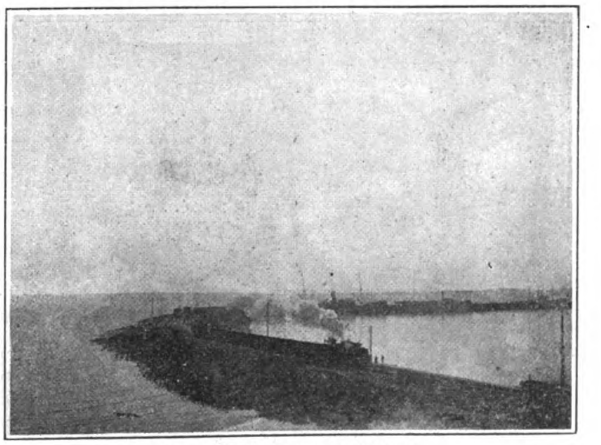
COKE.—The Administration's special coke is a first-class hard, close-grained and clean product, with low percentages of ash and sulphur. No better coke is produced in the Far East. For metallurgical purposes it is in all respects eminently suitable.

Coke is shipped either in bulk or packed in special wicker baskets, which reduce breakage to a minimum.

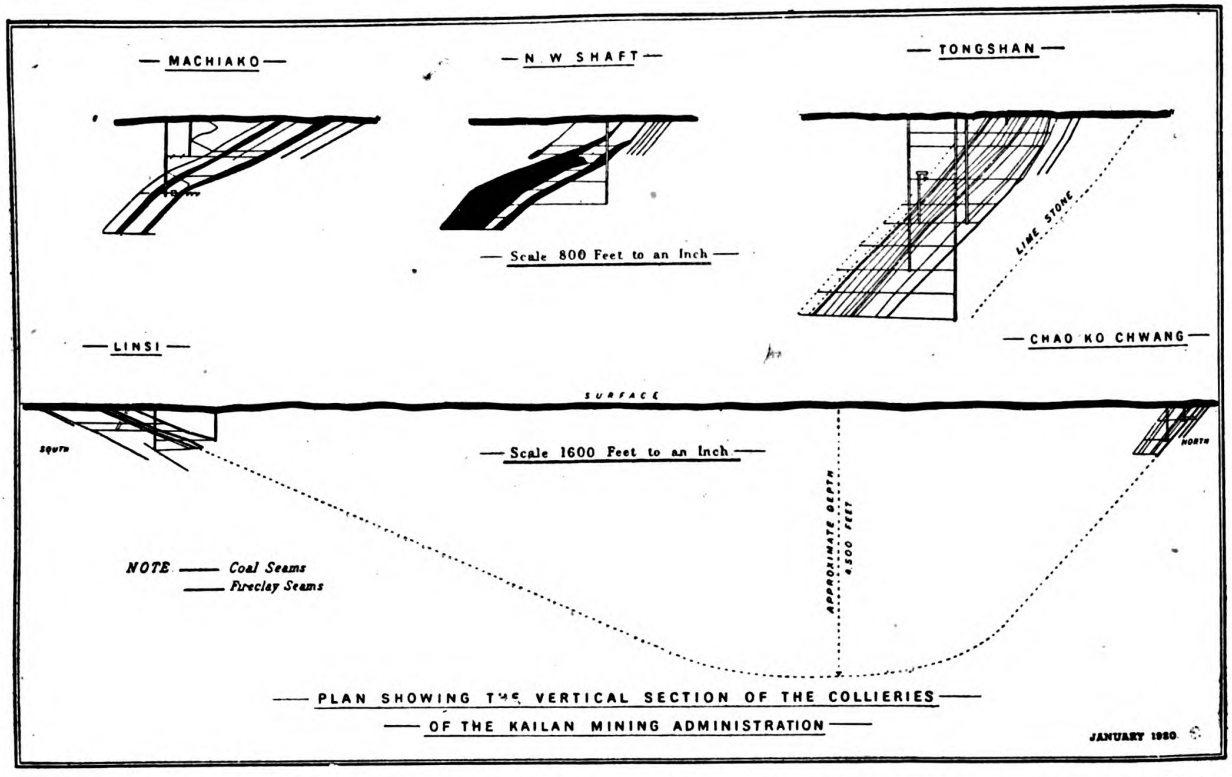
AFFORESTATION.—In consequence of the difficulty of securing adequate supplies of pit props and other timber in North China, the Administration and its predecessors have been engaged in the extensive afforestation of their large holdings of agricultural land in Chihli province. It is hoped that the Administration will be able to commence cutting its own timber within the next year, and at no very distant date to meet the whole of its mining timber requirements from its own forests.



A Corner of Linsi Power Station, Turbo-Alternators

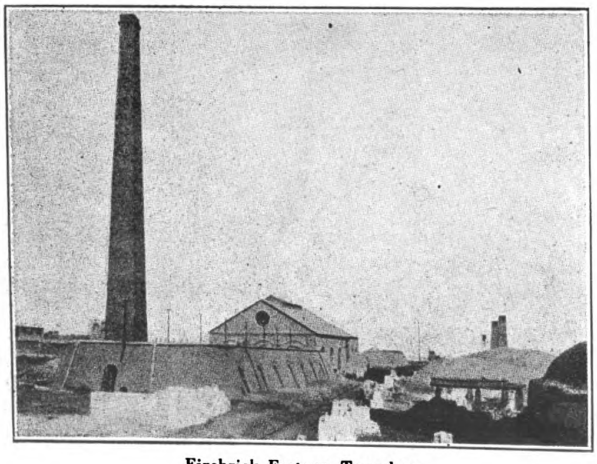


View of Chingwangtao Harbor



Refractory Bricks an Ancient Industry.—Throughout the Kaiping coal basin there were formerly extensive deposits of very plastic clays, capable of vitrification at a relatively low temperature. Hence the district has for many centuries been famous for the coarser forms of pottery. The exhaustion of clays with these properties will shortly terminate one of the world's most Ancient Industries, and the local potters, with their natural talent for clay manipulation, are gradually being employed by the Administration in the manufacture of firebricks.

Extensive Deposits.—The deposits of true fireclays have been practically untouched by these ancient enterprises, and the whole of the outcropping fireclay seams, extending over a distance of about twenty miles, await exploitation, assuring an ample supply of raw material to meet all possible requirements for many years to come.



Firebrick Factory, Tongshan

Class of Clays.—The fireclays generally resemble the best examples of Stourbridge clays. One large seam, however, is especially interesting, in that it contains alumina in the proportion of 44 per cent., with ferric oxide, lime and alkalies in small quantities.

Class of Bricks.—The firebricks manufactured by the Administration are classed as chamotte bricks, as distinct from silica, magnesite, chrome, bauxite and other specialities in demand for particular metallurgical purposes. They are, however, produced in first, second and third grades, which cover so wide a range in chemical analyses, crushing strength and resistance to abrasion, that they will be found suitable for most of the industries requiring refractory clay products in the Far East.

A New Liner for the Orient

The Admiral Line office in Shanghai has received cable advice from their head office in Seattle to the effect that the *s.s. Wenatchee*—the first of the five new passenger liners allotted to this company by the United States Shipping Board, arrived at Los Angeles on March 30th en route for Seattle, from where she will start on her first Trans-Pacific voyage on April 9th.

Representing an investment of $6,500,000, the palatial new liner sailed from New York March 12th. She touched at Havana, Cuba, Panama Canal, Los Angeles and San Francisco. At Seattle, which will be her home port, she will be officially welcomed by the Chamber of Commerce and Commercial Club.

Among the prominent passengers aboard when she arrives at Shanghai April 26th will be Major-General Leonard Wood and staff, Captain Robert Dollar, Ex-Governor Forbes of the Philippine Islands, Mr. Chester Thorne, one of the principal bankers of the Pacific Coast, and also a Director of the Admiral Line, together with several newspaper correspondents.

The result of the trial trip of the *s.s. Wenatchee*, held March 2nd, exceeded expectations. She made as high as 20.5 knots per hour, with an average of 18.75 knots for the trip.

the assumption that eventualities in China have taken shape as a result of Soviet initiative. Before this transpired, another event to encourage Soviet Russia was the Chinese mission to Moscow headed by General Chang See-lin, one of the younger followers of General Wu Pei-fu. A memorandum was delivered to this Chinese military individual last October, so it is stated in the Pasvolsky article, and in it were intimated the basic conditions of the treaty which the Soviet was willing to sign with China. The memo was transmitted to Peking and if the Soviet mission to Peking as recommended by Dr. Wellington Koo is a result, then there is more reason to believe that the trend of events in China is a result of Soviet instigation.

Continuing his article Mr. Pasvolsky says that the Anti-Japanese section in China perceives a possible encounter with Japan. It is what the Soviet desires and under the Soviet's guidance and assistance. She is trying to push China into such an eventuality, it is stated. The Chinese delegate, Lai, at the second Congress of the Third International is reported to have said, "China was refused everything at the Paris Peace Conference." Strikes and discontent are claimed to be the result. Certain it is that a student upheaval followed upon the peace conference, the cry "Shantung for the Chinese" making itself heard throughout the treaty ports, but taking everything into consideration there is no real discontent in China although the Bolsheviks would have the world believe so. At all events, the political situation in China, resulting from the enmities aroused by the sympathies and antipathies towards the Japanese is just the kind of opportunity that the Third International wish for. Mr. Pasvolsky says that the stage is rapidly being set in China for the possible tragic farce of a revolution that may result in the establishment there of a Soviet state. Those who believe that they understand China and the Chinese will not admit that the country can be stirred to resent or to take part in any movement which may come about through the aspirations of a military or political party. They will no doubt feel that a lethargic and indifferent attitude will be presented to any overtures designed to convert the main body of the people, peace-loving and contented as it is. Whatever may happen in China, even a complete reversal to a control over the country as was exercised in days of yore, apathetic acceptance of the state will show itself on the surface, undisturbing, in the main, the every-day, matter-of-fact routine that has been in vogue for the last five thousand years. Other students of Chinese affairs may coincide with Mr. Pasvolsky's views. They might believe with him that the storm of a communist revolution which he says is brewing so ominously in China at the present time might be so effective that should it break out, no better signal or stimulus could be desired for the other countries of the Far East, India, and the countries and states nearer China. If he and they are correct, and there is a possibility of their being so, sufficient stress cannot be laid on the necessity to combat the menace by every possible means. A disturbance of this sort in the East would undo the work that our forerunners have so diligently and so splendidly built up (if the inculcation of modernism is considered a worthy endeavor), to install in its place . . . ? It is yet to be conclusively shown that the drastic measures of the Bolsheviks have benefited the majority as effectively and lastingly as did the disciplined and orderly methods of their predecessors. Peace and order is what the world, or the people and not the governments of the world it must unfortunately be added, are most desirous of settling down to. Fed to the teeth with intrigue, revenge, spite and all the other exhibitions of mental unbalance, the people of the world will soon put the brake to the activities of their representatives, and will demand a just and equitable settlement of outstanding difficulties. Unless they do so a sort of despair will very probably drive a reluctant populace to imbibe the narcotic that has made the Russian giant reel. According to this maniac there are two storm centres in the world at the present time—Afganistan and China. Set going, these whirlwinds might catch up the whole world and precipitate it into a bedlam. It is not improbable, but the sober-minded, the calm and purposeful, of which there are fortunately no small number, will set their faces to the menace which might actually exist. The warning is sounded. It might be another "Wolf" cry of Æsops' fable, but it is well to harken unto it in case the wolf does actually exist. Contending that it does, Mr. Pasvolsky says: The Soviet government may talk about placing portions of Siberia at the economic disposal of the United States or Japan. It may offer advantageous concessions, it may insist, as it has been doing, that the buffer state of Eastern Siberia should organize political forms of the kind that would make foreign capital, American and Japanese particularly, feel itself at home there. This is termed bait to credulous foreigners. If the Soviet government gains a footing in China, what will become of the open door policy and all the rest of the Far Eastern policy to which the United States is pledged in furtherance of its legitimate and logical national interests? The inference arrived at through Mr. Pasvolsky's question is obvious.

He further tells us that Russia's activities in Asia are too extensive to be merely efforts to frighten the powers into dealing with her. They are not diversions, but represent serious steps to which the Soviet stands committed. Finally he says: "Unless the Soviet régime and the Third International, which depends upon the continuance of this régime for its own existence, collapse, the fate of the world's civilization will indeed hand in the balance when Asia's vast millions, goaded and stung into fury by communism, will really rise—a veritable Hun at the gate of Western civilization."

The lesson learned in 1900 will never be forgotten. The foreigner in China knows that while the bulk of China's millions are peace-loving, a fanatical re-action is not impossible. Extremely difficult to rouse is the old patriarch, and even in the midst of fanatism he looks on mildly indifferent. It is not he who takes part in the debacle but it is his indifference which makes it possible. Hence, if the possibility of menace has not been obliterated by Lenin's reported conversion, it were well to take heed, to observe with watchful eye, and to combat with skill and fervor, if the storm, which the weather profit informs lies just below the horizon, rises and threatens to envelope us.

Famine Prevention Seen in Railway Development

Park-Union Views

DISCUSSION of trade conditions and opportunities in China gives place to consideration of the appalling fact that 40,000,000 Chinese in five provinces are suffering from famine, with the prospect that 15,000,000 will die of starvation during the course of the winter. Such a situation is beyond the power of mind to grasp. It is made worse by the fact that practically the only country of great wealth in a position to give aid is the United States. Early in December President Wilson appointed a nation-wide committee of men and women, headed by Mr. Thomas W. Lamont, to direct such relief as the American people may extend. This grave situation in China, at a time when she is assuming a new and more important place in foreign trade activities, naturally suggests that it is through the opening up of that vast country by modern means of communication and by making it an accessible mart throughout that future famines will be prevented.

The announcement in Japanese advices, of the proposed improvements to the South Manchurian Railway, is a promise of relief and prevention for future famines. The improvements include the purchase of engines and cars, acquisition of steamers and launches for the Shanghai line, and new wharves and harbor works.

Other projects proposed include more smelting furnaces at the Anshan Iron Works, development of the Fushun copper mines, extension of electric light works in Dairen, Mukden, Changchun and elsewhere, and the extension of existing public works, experiment stations, warehouses, hospitals, schools, office buildings and dwellings for officials and employees.

Two Sessions Daily

Usually there are two sessions on an ordinary business day, each session having two rounds of calls for all the securities upon the list. The call is made according to the order of bonds and shares as arranged by the exchange, the transactions for the three different accounts being done separately and consecutively. Buying and selling on the floor is facilitated by the aid of signs and signals peculiar to the exchange, and all the bargains done are quickly taken note of as soon as they are effected, by some clerks of the exchange specially installed for the purpose. Bids and offers are allowed to be made and accepted until what is deemed an equitable and normal price is arrived at. Then the secretary upon the rostrum announces by a clap of blocks that no further transactions are to be registered. Upon this, all the bargains entered in the market memorandum become binding simultaneously at the single and uniform price officially declared by the exchange, and irrespective of the original prices at which the respective contracts were entered into. Therefore the jobbers should be keenly on the alert to do or undo all the sales, as the circumstance may be, prior to the official announcement of the quotation. Then each broker's sales and purchases are set off and made null and void so far as they match with each other, unless he sends in a declaration to the contrary in time.

One remarkable feature in the time-bargains is that pending the term of contract the securities bought or sold for account can be freely re-sold or re-purchased, without the knowledge of the other party. The party effecting such a re-sale or re-purchase shall be entirely released of the fulfilment of the contract, upon payment or receipt of the difference between the original and the re-sale or re-purchase price. The duty to effect delivery will devolve upon the party with whom he has stipulated such a bargain. It may be repeated here that, in Japan, the exchange guarantees the performance of all the contracts duly entered into on the floor ; and the custom above referred to doubtless owes its origin to this guarantee system. Of course the final object of time-bargains is the same as the forward bargain so far as regards the bona fide delivery of securities, the only difference being that for the former a longer interval of time is allowed to stand between the conclusion of the contract and its settlement.

There being on an ordinary business day two sessions, each with two rounds of calls for all the securities upon the list, dealings in any one kind of stocks transacted on any one day may vary in prices, but in registering these bargains on the record of the exchange, they all are reduced, for convenience's sake, to a single price specially quoted for the purpose, the exchange paying to, or receiving from the parties concerned, the differences between the respective contract and the record price. The arrangement for quoting every security twice in a session is thought to allow more opportunities for dealing.

Margin Requirements

Quite contrary to the western custom, the form of time-bargains on the Japanese exchange is that of trading on margins. A margin differs according to the nature of the security and the then prevailing situation of the market. The rate generally ranges from somewhere about 4 or 5 to 15 per cent. of the market prices. Not infrequently, in the event of wider fluctuations of the prices, deposit of extra margins by the losing parties is insisted upon by the exchange, in conformity with the provisions of the rules of the exchange. Monetary deposit may be substituted by the deposit of approved securities.

All deliveries and payments should be made through the medium of the exchange ; otherwise they are not regarded as legitimate. Clearing facilities are not yet made use of in Japan in connection with the settlement of the transactions upon the floor although deliveries are simplified by the establishment of the uniform delivery prices.

Shares and debentures are placed upon the list after the business condition and financial standing of the applying company are judged satisfactory, and in like manner, the exchange authorities may at any time suspend, at their own discretion, dealings in, or summarily cancel from, the list the securities of any corporation judged internally unsound, or when their dealings are regarded as perilous to the welfare of the exchange.

A New Book

IN so far as it affects the railways of China, their regulation and administration, Chin Chun Wang's book "Legislative Regulation of Railway Finance in England" will satisfy those students and other enquirers of railway methods and conditions. They will find in it a comprehensive study of "General Legislation on Railway Finance" ; "Legislative Supervision of Capitalization—(*a*) Share Capital" ; "Supervision of Railway Capitalization—(*b*) Loan Capital" ; "Control of the Borrowing Powers of Railway Companies" ; "Registration of Railway Securities" ; "Regulation of Stock Watering" ; "The Regulation of Railway Accounts" ; and "State Auditing and Inspection." Such a work deserves commendation not merely on its merits but also because it obviously is the result of serious study on the part of a Chinese gentleman whose acquisition of modernism did not gain impetus through inheritence. It is a matter of doubt whether such a work could have been better accomplished by an Anglo-Saxon whose lineage

Dr. C. C. WANG
Chinese Railway Expert

gives him an advantage in an understanding of the common sequence of modernism which the Oriental cannot hope to acquire until he has behind him years of familiarity with industrial development of the Western type. The author is better known to foreign sojourners in these parts as Dr. C. C. Wang, one time director of the Kin-han Railway and now councillor in the ministry of communications and second vice-president of the Chinese Eastern Railway. His experience in Chinese railway affairs makes of him an authority on such matters, and his book, which has just been published by The University of Illinois with which he has been associated in the past, being a sometime honorary fellow in economics there, proves him to be an authority on railroad matters other than Chinese. If it travels no further, and it is not difficult to believe that it will, the book should at least find resting place on the reading table of those interested in the development of China's railroads in so far as the arguments or studies contained therein can affect such.

A Large Building for a Technical College in Woosung.—A large building is being built for the Tung Chi Medical and Technical College at Woosung, in grounds of about 150 *mow*. The cost of the work is estimated at more than $270,000, and the work is expected to be completed by the end of this year.

New Building for the General Chamber of Commerce, Nantungchow.—A new building is to be built for the general chamber of commerce of Tungchow, Chungming, Haimen and Taishing at Nantungchow to take the place of the old building which is not spacious enough to accommodate the present increase of membership, as decided at the joint conference of the chambers of commerce of four cities above-mentioned. The building is to be situated at the southern part of the city, and will occupy a tract of land of about more than 30 *mow*. The building will include apartments for a bazaar and booths for money dealers and cotton trandesmen. The construction work is expected to be completed in August or September of this year, and the cost is estimated at approximately $170,000.

RAILWAYS

Japanese Railway Extension.—By sanction of the ministry of communications and the Fengtien government the railway authorities have signed a loan agreement with the South Manchuria Railway Company for the extension of the Sze-Cheng railway to Taonanfu, Eastern Mongolia, as a branch of the Japanese line; but the present plan is to extend the Szepinchieh-Chengchiatun railway to the suburb of Tungliao district. The distance is about two hundred and fifty Chinese *li*. Japanese and Chinese are surveying the line now.

Rolling-stock from America.—The first order for a large number of cars to be purchased under the railway agreement concluded between the ministry of communications and the Chinese bankers will be placed with American manufacturers. This decision was reached by railway experts appointed by the ministry and the bankers special plans showing the nature of rolling-stock required were prepared by these experts.

Chinchow-Tsitsihar Line Again Brought to the Front.—According to a report alleged to have come from the communications department, the Chinese government is seriously considering to construct a line connecting Chinchow with Tsitsihar via Taonan, in consideration of the frontier defence of Kirin and Hailungkiang, which is daily growing in importance, and the necessity of direct communication with the border provinces with Central China by means of China's own railway, instead of availing of the South Manchuria line, as at present.

Indo-China May Get New Railroad.—Before sailing to resume his post as governor-general of French Indo-China, M. Maurice Long stated that the Indo-Chinese internal loan granted by parliament is to be used chiefly for completing the railway system, with particular attention to the establishment of a through line to China.

Double Track Line to Shanhaikwan.—With regard to the project of building an additional track on the section of the Peking-Mukden Line which connects Tangshan with Shanhaikwan, the cost of the new track is estimated at $6,000,000 which will be paid by means of a short term loan from the British-Chinese Corporation and repayment of the loan will be effected by appropriations from the surplus of the Peking-Mukden Railway receipts. The proposal, it is reported, emanated from the British legation which recommends this improvement on the ground that it would much facilitate the transportation of coal from Tangshan in larger quantities. The scheme was discussed at a cabinet meeting and was duly approved.

To Construct Chinchow-Aigun Railway.—It is reported among Chinese militarymen that for frontier defensive purposes, the high authorities in Fengtien and Heilungkiang have approached the Peking government recommending the construction of the proposed line which was dropped opposition of Russia and

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New Station on Jo government railways an has been opened at Yoru and Ono on the Joban li

New Japanese Railw ment of the Saisatsu Kyushu, includes the c railway line between S further line between Nis finished next month, an for a line between Akune

Sleepers for Tsin-pu Pukow Railway has p China Import Lumber sleepers at a total cost o

To Extend Railway sanction of the ministr the Fengtien governme have signed a loan a Manchuria Railway Co of the Sze-Cheng railv Mongolia, as a branch the present plan is to Chengchiatun Railway district. The distance fifty Chinese *li*.

Japanese and Chinese

Rolling-stock Unsuit chang, managing direc Railway, reports to th received a consignme goods cars supplied by the cars have been fo of the Tsinpu Railwa

Modern Money

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by compromise, the government has arranged for the cars to be shared between the Peking-Mukden and the Tsinpu Railway.

Manchurian Railway Projects.—Marshal Chang Tso-lin is conferring with the government and the authorities in Kirin and Heilungkiang concerning the construction of the proposed Chinchow-Tsitsihar Railway which will connect with the Peking-Mukden line at Chinchow for military and other strategical uses in Manchuria; but as the Japanese regard the Chin-Tsi line as a formidable competitor of their South Manchuria Railway, the Japanese press in Manchuria opposes it strongly. It is reported that in order to test the sincerity and strength of the new consortium and its real relations with Japan, the Chinese will shortly approach the consortium for a loan for the construction of the Chinchow-Tsitsihar Railway and the result will show whether Japan's so-called "special privileges" in South Manchuria and eastern Mongolia have been recognized by the powers.—*Asiatic News Agency.*

New Electric Engines for Tokyo Suburban Line.—The imperial government railway will use the roller type of electric engines for the suburban lines of Tokyo city, and orders have been placed with foreign firms for eight of these. Others will be purchased if these prove satisfactory.

New Line, Kowloon-Canton Railway—A railway is projected between Waichow and Ping Wu (Kowloon-Canton railway), a distance of 45 miles. The cost is estimated at $3,000,000.

Budget of the South Manchuria Railway Company.—The South Manchuria Railway Company has published its budget for the next fiscal year in which the ordinary expenditure of approximately Y.200,000,000 is estimated. The expenses for engineering works, amounting to Y.70,000,000 are to be defrayed by the second floating of loans to the extent of Y.12,000,000, Y.10,000,000 of the reserve fund for the fiscal year of 1920, and Y.50,000,000 of new shares. The present fiscal year, according to Mr. Nakamishi, vice-president of the company, quoted in the *Yamato*, saw the curtailment of the estimated enterprises owing to the high price of commodities.

Contemplated Railway Line in Szechuan.—Surveying work has been commenced for a short railway line from Tzelieutsing to Tenchingkuan, Szechuan.

New Double Rail on the Peking-Hankow Railway.—The Peking-Hankow Railway administration contemplates doubling the rail on the Lukowjao-Liulichang section of the Peking-Hankow Railway.—*Chinese Press Report.*

Tsinpu Railway Buys New Cars.—The Tientsin-Pukow Railway has placed with an American manufacturing firm an order for 100 cars estimated at a total cost of $800,000.

$1,200,000 for Shih Cheng Railway.—A loan of $1,200,000 has been borrowed by the Shih Cheng Railway authorities from a certain foreign source so as to enable the administration to extend the line in question to Chengchow. The loan is borrowed at ninety-seven and is to be repaid in four years' time.

Plan for Double Rail.—For facilitating the transportation of coal the railway line on the track of the Tangshan-Shanhaikwan section on the Peking-Mukden Railway will be doubled. The total cost for the work is estimated to be $5,000,000. In addition to this $140,000 will be expended on the purchase of locomotive and $900,000 on cars.—*Chinese Press Report.*

China—Railway Construction.—Construction work on another small section of the Szechuan-Canton-Hankow Railway line is shortly to be undertaken, according to the director-general of the railway. The section in question lies between Chuchow, in Hunan, and the Kuangtung border. A party of engineers has been sent into Southern Hunan for making surveys. The region is mountainous and infested with bandits, and General Chao, commander of the Hunan troops, has sent a detachment of soldiers to afford protection. As a preliminary to the task, a motor road will be built along the proposed route for carrying materials.

A presidential mandate has been issued sanctioning the construction of the Ching-Meng branch railway. This really constitutes an extension of 65 kilometers of the Tao-Ching Railway line from its present terminus, Chinghua, to Menghsien on the left bank of the Yellow River, just northeast of Honanfu. The latter point is an important ferry junction through which passes the bulk of the trade between Luanfu and Tzechow districts of Shansi, and the territory to the south. The line will tap a densely populated and highly cultivated region. It will be constructed by the Peking Syndicate, Ltd., general managers of the Tao-Ching Railway, who are heavily interested in mine concessions along the line.

The syndicate will make a loan to cover the cost of construction the same to be secured (1) by a general guarantee of the government, (2) by a mortgage on the permanent way and the revenues of the line, and (3) by certain revenues of the Tao-Ching Railway. The latter line is to be used for the transportation of needed materials and when construction is completed, its rolling stock will be leased to the Ching-Meng Railway on a rental basis.

Chinchow-Shouyang Branch of P. M. Railway.—Land is being purchased by the ministry of communications for building a branch of the Peking-Mukden Railway between Chinchow, Fengtien and Shouyang, Jehol.

Rolling-stocks for P.-H. and S.-N. Railways.—The Peking-Hankow Railway board has purchased 40 passenger cars and 30 locomotives from Andersen, Meyer & Co., Ltd. The request of appropriating part of the rolling-stock loan, lately contracted between the Peking central government and the Chinese banking group, for the purchase of 100 passenger cars and 6 locomotives by the Shanghai-Nanking Railway board has been sanctioned by the Peking government.

Sze-Tiou Railway in Fengtien.—The construction work of the Sze-Tiou railway in Fengtien will be commenced on April 1, 1921. About three thousand famine sufferers will be transported there as laborers.

Timber for T.-P. Railway.—Two hundred and twenty-five thousand pieces of logs have been purchased by the Tientsin-Pukow Railway board from Hsiang Tai Timber Yard at a cost of $784,500.

WATERWORKS

Extension at Tungkadoo.—In regard to the extension of the Chinmean waterworks plant at Tungkadoo it is pointed out that a study of the projected plans has been made. These include: (1) The erection of special scaffolding to take in river water at all states of the tide; (2) the construction of a new pumping station; (3) the erection of a new water tower of 1,000 cubic metres capacity; (4) design of filters for the new station capable of a daily distribution of 26,000 meters. Materials have already been secured for the projected extensions.

New Waterworks in Wuchang.—New waterworks are to be established in Wuchang, Hupeh. The total capital is $1,500,000, of which $400,000 has been collected. It is registered with the ministry of agriculture and commerce. Construction will commence shortly.—*Chinese Press Report.*

New Irrigation Scheme in Korea.—The Nagooka Colonial Company are developing our irrigation scheme in Keiki province, Korea.

To Install More Water Pipes in Shanghai City.—The water pipes installed in the Shanghai city are not sufficient to meet the present demand so the Shanghai Chinese Waterworks plans to install water pipes extending to a length of about 9,000-ft. (Chinese measure) in and around the Chinese city. The pipes will be made by the iron works at Pootung and the Chinese arsenal separately, and the cost of the work of installation of these pipes is estimated to be about one hundred thousand dollars.

HARBOR WORKS

Construction of Hulutao Wharf.—The cost of constructing the harbor and other important works for the development of Hulutao, Chili, as a commercial seaport is estimated at over $3,000,000. A French firm has offered to advance the sum required. It is stipulated in the contract that the work must be completed within three years from the date of signing of the contract.

Proposed Reconstruction of Lienshan Harbor.—With reference to the reconstruction of Lienshan Harbor (at Hulutao) south of Shanhaikwan, it has been decided by the Chinese authorities concerned to invite tenders concerning the reconstruction work from a Dutch engineer of Shanghai, as recommended by Mr. Yeh (minister of communications, Peking) who visited Fengtien (Mukden) towards the end of last year, and another engineer in the service of the South Manchuria Railway Company. These tenders are, we understand, to be presented early in April.

The expenses required for the reconstruction work are estimated at about S.Y.17,000,000 and the term thereof is put at seven years. The expense amount is to be defrayed in equal shares by three eastern provinces and the Peking-Mukden line of the Chinese government railways.

China to Build Hulutao Harbor by Herself.—According to official reports Mr. Yeh Kung-cho went to Hulutao to inspect the harbor works there, with a view to deciding whether the construction plan is feasible. The director of the work is said to have $8,000,000 in hand and it is officially stated that there is no intention to obtain foreign money to complete the enterprise.

Plan of Constructing a Big Harbor at Haichow Contemplated by Government.—The department of communications is contemplating the construction of a big harbor at Haichow to rival Shanghai. With that in view, the matter of building the Hai-Lan Railway at all possible speed has been decided upon.

Sea Dyke at Chinhai.—A sea dyke of several hundred feet in length has been constructed by the San Peh Steamship Company, of which Yu Ya-ching is the director, at Chinhai, Chekiang, in order to open the harbor for small steam vessels. Further plans call for the construction of a 5,000-foot dyke during this year.

Taihu Lake Conservancy Plans Dredging of the Lake.—Mr. Wong Chih-mu, director of the Taihu Lake Conservancy, has wired to the Peking government asking for permission to mortgage the one million dollars' worth first year premium treasury bonds in his possession to the Sino-Japanese exchange bank in the capital for the sum of four hundred thousand dollars in cash for the purchase of dredging machinery from Japan. Mr. Wong is of the opinion that thousands of acres of arable land can be made good for the cultivation of rice and wheat in Kiangsu province after the Taihu Lake has been properly dredged on modern methods.

Naval Base at Chinwangtao.—A part of the Chinwangtao harbor has been chosen by the ministry of navy for a naval base. The cost is estimated at $1,700,000. There are two special advantages attached to the spot chosen, namely, that it is not ice-bound in winter and fresh water can be easily got.

Taching Ho River to be Studied by Naval Surveyors.—At the suggestion of the civil government of Chihli, the ministry of the Chinese navy is sending experienced naval surveyors to the Taching river for surveying purposes.

In his telegram to the government, Mr. Tsao Jui says that the Taching river cannot be dredged without a foreign loan, because it is exceedingly difficult, at the moment, to raise Chinese capital for the purpose.

Tientsin mercantile circles oppose the foreign-capital construction of harbor at Taching river because they argue it will interfere with the

commercial prosperity of Tientsin ; but they rather favor the building of harbor there with purely Chinese money.

Repair and Extension of Railway Wharves at Pukow.—A contract has been made between a Shanghai Shipbuilding Yard and the Tientsin-Pukow Railway board for the broadening of Nos. 9 and 10 floating-wharves at Pukow station to an extent of 1,524-ft. (Chinese standard measure) wider, and also for the repairing of Nos. 3, 4, 5, 6, 7 and 8 wharves. It is estimated that the work of broadening the two wharves will cost about $66,000. —*Chinese Press Report.*

PUBLIC WORKS

Municipal Improvements.—The Canton municipality is pushing ahead the scheme : (1) to demolish the city wall and its gates, 15 in all, leaving two northern gates for the protection of the Tuchun's yamên ; (2) to build main roads, public gardens and markets ; (3) to establish industrial factories for the absorption of the poor and the destitute. The work of demolishing the old city wall was commenced on the western section. This ancient and famous structure consisted of an inner and an outer wall, the former having been erected about 800 years ago and the latter, known as the new city wall, having been built some 300 years later. The entire structure has now been demolished except for a few hundred yards on each side of the five-storeyed pagoda, in the vicinity of the northern gates, which have been left intact. It has been decided by the municipal authorities that the site hitherto occupied by this ancient structure shall be utilized for the construction of a fine broad well-made modern road, on which it is intended to lay down tramway lines with a view to introducing a modern tramway system. This new main road will also be sufficiently wide to supply a long-felt need for motor traffic, which is now being gradually introduced into Canton by modern progressive men. The width of this road will be from 80 to 100 feet, and the entire length about six miles. A distance of over two miles in the south-eastern section has already been macadamized, and the completed road has been opened to jinricksha and motor car traffic. With the erection of more imposing modern buildings, Canton will become a very attractive city.

ROADS

Road to Employ Famine Sufferers.—The ministry of communications proposed to employ as many famine sufferers as is possible in constructive work. A national highway from Peking to Shanghai is one of the suggestions. A body of surveyors started from the metropolis recently to chart the road as far as Tsinanfu, the capital of Shantung. In accordance with their suggestions the highway will pass through Sincheng, Hsiunghsien (Siunghsien), Yuchang and Yenchowhsien. The final survey will probably be completed in the spring, and the civil governor of Chihli has been instructed to issue suitable notifications to the people in the districts concerned.

To Construct More Roads Near Peking, China.—Hankow Railway administration has communicated to the ministry of communications a proposal for the construction of the following highways, which it states will be of great benefit to the railway and will also provide work for famine sufferers :—

(1) From Kowyang to Mancheng, 60 li. (2) From Hsushuai to Anhsin, 67 li. (3) From Chichow to Yangchuan, 45 li. (4) From Wangtu to Chingfengtien, 23 li. (5) From Shuntehfu to Kuanhsien, 30 li. (6) From Hantanhsien to Tamingfu, 140 li. (7) From Hsuhsien station to Hsuhsien city, 2 li. (8) From Hsincheng station to Hsincheng city, 10 li. (9) From Hoshangchiao to Yuchen, 70 li. (10) From Chichow to Wuan, 100 li. (11) From Kuangluchen to Pengcheng, 30 li. (12) From Shunteh to Shueihsien, 45 li.

The above-mentioned roads are all connected with Peking-Hankow Railway. It is believed that the government will approve the scheme.

New Road in Korea.—A new road is being built between Poryoshi and Shinkyo in Korea. This should open up further business for the latter-named town, as there is a harbor, this is used by the Chosen Kisen Kaisha.

New Motor Road.—The Manchurian authorities have suggested the construction of a long distance motor road from Pukuei to Heiho and through Liaoho as far at Taonanfu in order to give work to famine sufferers.

Soldiers to Build Roads.—In view of the bad condition of the public roads in Shansi, General Yen has given orders to the commanding officers of provincial army ordering them to send their soldiers to build and repair the roads, first from Tâiyuan to Yunchen and then to other districts. It is the intention of Governor Yen to construct modern roads throughout the province as a model for other provinces to follow especially as the troops have nothing to do at the present moment.

Shanghai-Liuhe New Road.—Plans are in progress to build a motor road from Shanghai to Liuhe, a distance of about 114 *li*. The total cost for the road, bridges and land is estimated at $170,000.

Tsinan-Lankow Road in Shantung.—An automobile road is to be built between Tsinan and Lankow town, Shantung, offering to famine sufferers, will be employed.

Tehchow-Lintsing Automobile Road in Shantung.—The Tehchow-Lintsing automobile road leading from Tehchow to Lintsing via Un-hsien, Wuchen and Shiatsin through a distance of about 70 miles is now being built by 4,000 famine sufferers. The Tehchow-Shiatsin section of the line has been completed, and the whole line is expected to be finished in March of this year.

Shanghai-Taichong Automobile Road.—An automobile company with a capital of $500,000 divided into 10,000 shares, half paid up at commencement, has been organized and several others, to provide for the construction of a 72-*li* long automobile road between Shanghai and Taichong.

Fengtien-Heilungkiang Automobile Road.—The Fengtien-Heilungkiang automobile road has been opened to traffic. The trunk line of the road runs from Pookwei to Liou via Heiho and Tiou-nan.

Chefoo-Weihsien Automobile Road, Shantung.—The Chefoo-Weihsien automobile road, Shantung, of a distance of about 650 *li* is being worked on by more than three thousand famine sufferers, and two-thirds of the whole line has been completed. The construction of this road is quite difficult as it runs through hilly country and twenty-eight bridges will have to be built. The work is expected to be finished in June of this year.

Chekiang and Anhuei to be Linked by an automobile Road.—A plan to build an automobile road between Szean, Chekiang, and Kwangteh, Anhuei, is being prepared. This road is to run for 30 *li* through hilly country from Kwangteh to Chiapah and for more than 20 *li* from Chiapah to Szean on a plain. A survey of the whole line of the road has been completed, and this remains now to carry on the work. Local wealthy persons are organizing a company with a capital of $300,000 to provide $150,000 for construction of this road and $100,000 for purchases and for erecting stations, leaving $50,000 for the reserve fund. The traffic management of the company is to erect three stations at Szean, Chiapah and Kwangteh.

Chekiang's Road Building Program.—In compliance with the order of the central government issued some time ago instructing all the provinces to co-operate in a nation-wide road building scheme, the program for the part of Chekiang province has been discussed and decided upon by the provincial assembly, a main road from Hangchow, Chekiang to Futien, Fukien, across the province from north to south for a length of about eight hundred *li* is to be built. The expenses will amount to about $950,000 a part of which will be borne by the central government.

BRIDGES

New Bridge for Canton.—The provincial assembly of Kwangtung has proposed that when the custom surplus due to the south-west is paid over, an appropriation therefrom should be made to pay for the cost of constructing a bridge between Canton city and Ho-nam (opposite to Canton on the opposite bank of the river).

Yellow River Bridge.—To study plans for the erection of a bridge over the Yellow River in place of the present one on the Peking-Hankow Railway, the ministry of communications intends to appoint a special commission, which will be composed of technical experts. It is proposed to engage the services of four experts, one from Britain, France, America and Belgium respectively as advisers to the commission. The ministers of the four countries mentioned have already expressed their willingness to obtain the services of suitable men. These technical experts are required to reach China not later than June 15.

Reconstruction of Japanese Bridge.—The Shoken bridge at Shibaku has lately been re-constructed, and the opening ceremony took place on February 3. This bridge is of iron with concrete foundations.

COAL

Japanese Open Coal Mines.—The Japanese firm of Okura in conjunction with other Japanese capitalists are to invest $6,000,000 in coal mines in Szechuan, Shantung. Work will begin in the summer.

Semi-Official Mining Company to be Established to Work Coal in Saghalien.—The amount of coal deposit in Saghalien is calculated at 500 million tons at the least estimate. A semi-official corporation capitalized at 70 million yen to work the deposit will be organized. A bill regarding the scheme is expected to be introduced to the present session of the Diet.

Anglo-Chinese Mining Enterprise in Shansi.—It is reported that negotiations having been concluded between the mining bureau of Shansi and the Pekin syndicate for working coal mines in the province, the draft agreement in Chinese and English was forwarded to the ministry of agriculture and commerce, last Sunday, for official sanction.

China's Coal Production in 1920.—The total output of coal from different provinces of China in the year 1920 is figured approximately as more than 13,000,000 tons. Below is a list showing the coal production of the different provinces :

Province	Quantity	Quality
Manchuria ...	25,000 tons	bituminous
,, ...	1,000,000 ,,	half-bituminous
Chili	40,000 ,,	anthracite
,, ...	2,090,000 ,,	bituminous
,, ...	150,000 ,,	half-bituminous
Shansi	4,000,000 ,,	anthracite
,, ...	25,000 ,,	bituminous
Shensi	500,000 ,,	,,
Kansu	500,000 ,,	,,
Honan	1,000,000 ,,	anthracite
Shantung ...	300,000 ,,	,,
,, ...	500,000 ,,	bituminous
Szechuan ...	500,000 ,,	,,
Yuanan ...	300,000 ,,	,,
Kweichow ...	250,000 ,,	,,
Chekiang ...	10,000 ,,	,,
Kiangsi	700,000 ,,	,,
Kwangtung ...	50,000 ,,	,,
Hunan	200,000 ,,	Miscellaneous
Kwansi	100,000 ,,	,,
other provinces...	100,000 ,,	,,

Kai Lan Coal Mining Co.—The daily output of the Kai Lan Coal Mining Co., Chili, is at present approximately 12,000 tons of different kinds of coals.

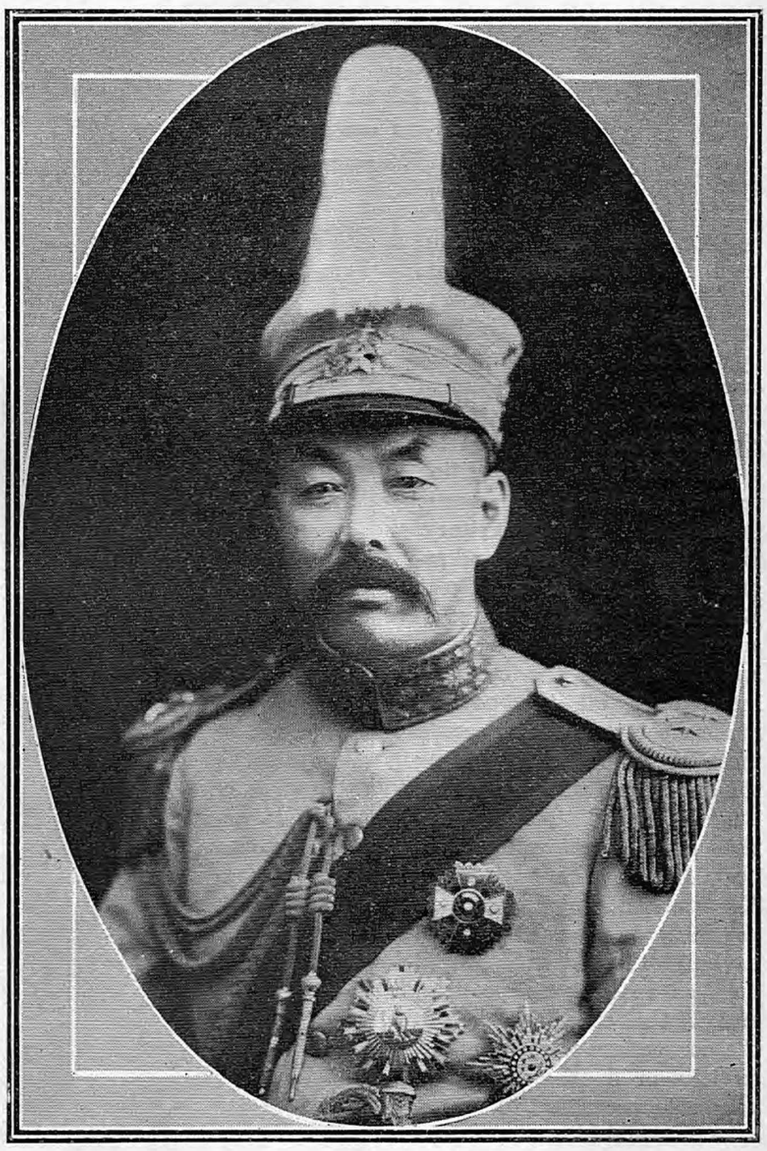
Japanese Coal and Fuel Factory.—The Watachu Shoten Co., Ltd. was recently organized for the sale of coal and fuel. Office : 3 Ichizen

Cdlj lro p^cb mlpfqflk) cfsb qelrp^ka j fibp ^`dlpp qeb M^`fcf >j bof^+kp `^k ob^9ifis ^pprj b ^k ^iqprfpqf^ qqfqrab ^ka ^aebdb ql ilcqv mofk`fmibp fk qil ^mmif^qflk lc qp^oifqflk^i mlif fbp qlt ^oap @efk^ ^ka Orppf^+ Te^qpsboe^mmbkp) qeb mblmib lc >j bof^t fii klq_b `^iiba rmlk ql m^v qeb mof b+ Qebpb _roabkp t fii ^ii _b mfiiba r..lk C^m^k) qeb ib^pq^Iib ql pq^ka qebj + Fc qeb >j bof^k mblmib e^a qeb pifdeqbpq fab^+qebv j fdeq_b `^iiba rmlk rkabo qeb lmbo^qflk lc qeb `lkplcofrj ^dcbbj bkqql pbka ^k ^qj v ^`dlpp qeb M^`fcf) fk ^ii mol_^_fifqv) qebv tlria e^sb p`orqfkfwba qeb `lk* plcofrj kbdllqf^qflkp ^p `ilpbiv ^p afa)C^m^k) ^ka abj ^kaba `boq^fk obpbos^qflkp pr`e ^p qebv klt fkpfpqj rpqeb t ofqqebk fkql qeb `lk sbk^kqlc qeb ib^drb+ ¯Qe+^qqebpb nrbpqflkpe^sb klq_bbk ^phba _v ^kv mlt bosfli^qfkd qeb kbrqp^ifqv lc @efk^+ ?rqC^m^k `lria klq+ Peb e^a ^icb^av m^fa qeb CG¥k^iqv cl oebo qprpqrikbpp fk qeb ^_fifqv lc @efk^ ql ^`q^p ^ _rcobo) ^ka `lj orlk*pbj 7b ^dpb ^_lsb pbkcfj bkq ^ka qeb cl rcqbbk mlfkqp) ^ka ^aj lkff@eba ebo ql et ^o` lc ^kv fab^ifpqf cb^co^kdbj bkq lc B^pdpdk >pf^ ^p ilkd ^p qeb mlpfqflk lc Orppf^ fk J lkdlif^ cbj ^fkba rkabcfkba+

C^m^k¥p mlpfqflk qecl rdelrq qeb `lkplcofrj kbdlqf^qflkp `^k qebcbcd cb _b cb^afiv rkabqpql a) erq`t bk qefp e^a ql _b `ib^civ ^ka `lkcfabkqf^iiv `lj j rkf^qba ql ebo ^iiv) _bd cb Alt kfkd Pqpbbq do^pmba qeb crii j b^kfkd lc t e^q peb t ^p eliafkd lrqd o+ Fq fp ^ obj ^ch^_ib `lj j bkq^ov rmlk qeb s^d^ofbp lc j `abdk afm* ilj ^`v) qe^q t efib qeb ?ofqfpe dl sbdkcrbkq t ^p pqp^fkfkd bsbov

CHINA'S MILITARY CHIEFS RESPONSIBLE FOR DEFENDING THE REPUBLIC AGAINST INVASION "FROM THE DIRECTION OF URGA"

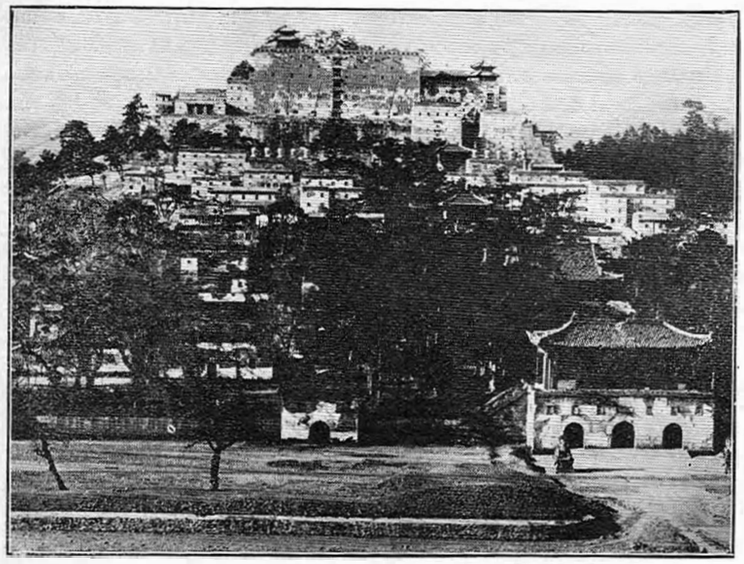
Marshal Chang Tso-ling
TuJhun of Manchuria and Actual Military Dictator of China, ordet"ed by the Peking Government to Recapture Urge.



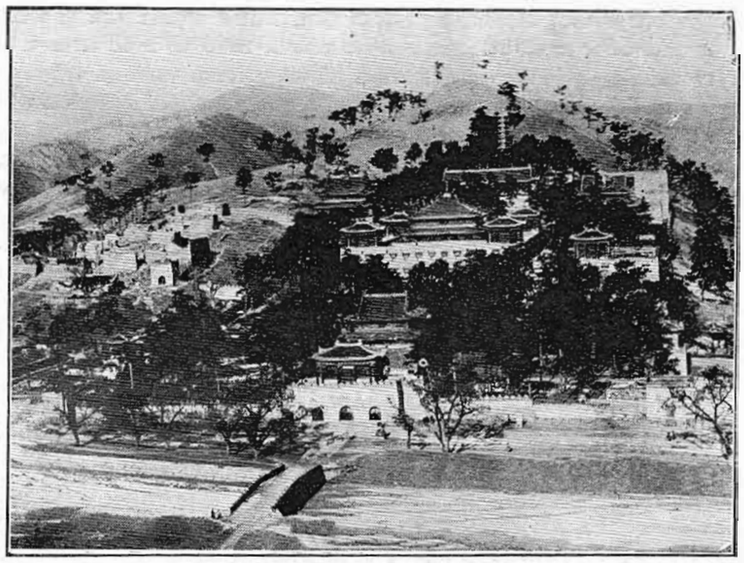
General Sung Lih-chcng
Tuchun of Heilungkiang Province (Manchuria.) also ordered to Recapture Urge.

_s qeb >j bof^k mr_if fp arb bkqfcbiv ql qeb c^`q qe^q qeb ^a* j fkfpqt^qflk ib^okba t bii qeb ibppl k lc qeb `i^kdbqp ^qq^`eba ql mbk `lsbk^kqp lmz7 iv ^cofsba ^q) ^ka prcol rkaba qeb `lkplcofrj kbdllqf^qflkp t fqe qeb rqj lpq pb`cb`v+ >ii lc t ef e e^p _bbk efdeiv a^kdbdlrp ql qeb mdbpbos^qflk lc mb^`bcri cbi^qflkp) mol* sfafkd qeb lmmloqrkfqs ql bkbj fbp lc)C^m^k ql j fpcbmdbpbkq) ebo `^pb ^ka elia ebo rm _bd cb qeb t lcia ^p `lkpmfcfkd ql mrpe eM0 fk* cirbk`b fkql @efk^ Yffqe qeb fab^ lc al j fk^qfkd qe^q`lrkqcv+

>p >j bof^ fp fk ^ p^cb mlpfqflk) pl Dcb^q?ofcq^fk ^ka* Co^k`b `^k ^cd oa ^q qefp qfj b ql ^mmol^`e qeb mol_ibj t fqe j ldk lo ibpp ^iqpre)cf `lkpfabo^qflkp+ Qebfomlppopppflkp fk >pf^ ^cb klqj bk^`ba bcdloqql mol qb`q qeb ^mmol^`ebp ql Fkaf^ cdj ^ mlppf_ib obqrok lc fqp fksbqbo^qb ^ka qp^afqflk^i>pf^cf bkbj s) qe^q B^oi @rowlk) qeb efdebpq?ofcfpe ^rqelofcv lk >pf^cf mol_ij p ^ka mlif fbp) pelria e^sb ql _b cbj fkaba qe^q C^m^k¥p lkb j bk^`b ql ebo k^qflk^i bufpqbk`b `^j b cdlj qeb p^j b nr^oqbo+ Qeb?ofcfpe dl cbfdk j fkfpqbo bkqfcbiv lsboillhba qeb fj mloq^kq c^`q qe^q)C^m^k¥p fkqbcbpq fk B^pdpdk J lkdlif^ a^qba cdlj qeb vb^o qe^q Orppf^ t ^p pb`cbqiv mrpefkd ebo kbt j fifq^ov o^fit ^v qlt ^oap qeb klcqe*^pq cdlkqfbcp lc Fkaf^) ^ka pbbhfkd il^kp fk M^ofp ql c^`fifq^qb ebo ^as^k`b rmlk Mbhfkd+ Sfp`lrkq @efka^ t ^p cfk^iiv `lj mbiiba obir`q^kqiv ql qeolt afmilj ^cf `lrqbpv ql qeb t fkap) fk lcabo ql j ^hb `ib^o qeb



The Great Lama Temple at Jehol



The Old Manchu Palace at Jehol

cacc for Japan. It is well to emphasize this basic Japanese position. He said, in effect, that the Taonan-Jchol line with its branch to the sea, was projected solely for the purpose of making it *a means of common defence on tM part of China and Japan against foreign invasion coming from the direction of Urga,* in addition to facilitating the economic development of the territory. He expressed surprise and regret that America and Great Britain interpreted this line as an eventual menace to Peking, and in view of the common interest of all the powers, made clear that Japan would make no objection to pooling the line within the consortium, but still hoped that the British government would support Japan in her position. Viscount Chinda laid stress on the desire on the part of Japan to build these two essent-ial lines as speedily as possible, and if the other groups in the consortium were reluctant to join in financing it that Japan be permitted to undertake this single-handed.. Viscount Chinda eou]d not know at that time, that this line, or its counterpart, the Chinchow-Aigun which the American Group controlled was designed for the sole purpose of undermining Japan's position in l\ianchuria, and as a lever to force her to sell out the South Manchurian line to the Harriman group.

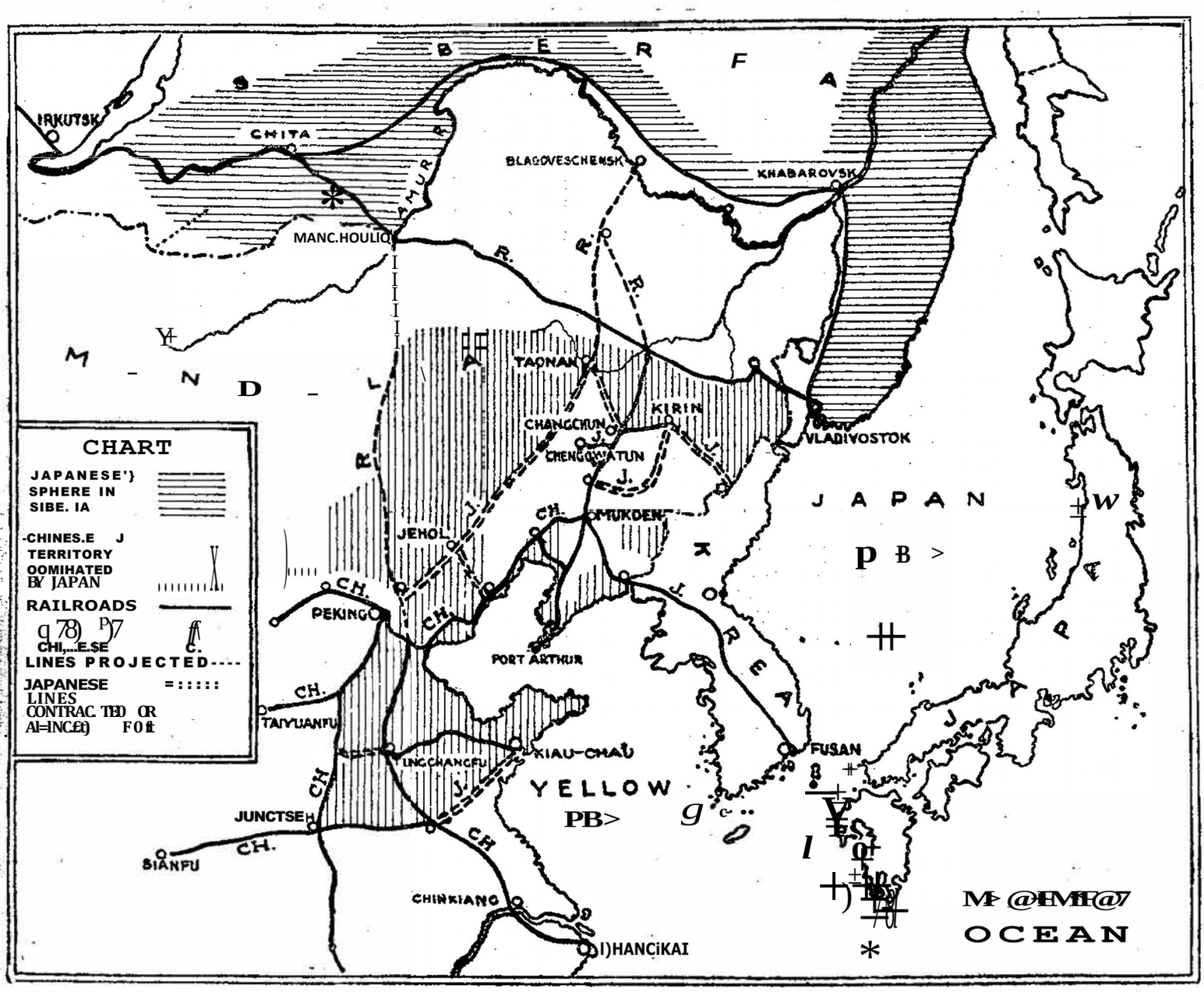
The insistence of Japan upon the right to construct these two lines as speedily as possible and to finance them independently, if needs be, brings under the lime-light the urgent rcasom:1 for their construction as an imperative strategical measure, for thr preservation of Japan's position and as a basic line of defence for the further opening up of Mongolia to the colonization of the yellow race. That J.apan finally accepted the assurances of her allies to respect her vital economical and strategic rights in this region is perhaps tbe most momentous feature of the entire consortium program. If this strategical outer line of defence is now to pass under international financial control it must carry with it the obligation of international armed support in the event that the neutrality of the line or the region is ever menaced from the direction of Urga. Great Britain, France and the United States, have therefol'e assumed a grave respon i-bility in coercing Japan to recede from her position and surrender her right;; to the Taonan-Jehol line to the consortium, and must, in honor, accept the corrollary, and dispatch their armed forces to the region in the event that Ja.pan is ever called upon to defend her position and preserve the territorial intebrrity of China. Present indications point to the inevitable occasion when, if the consortium holds together long enough, when the boys of America may again be ealled upon to cross the ocean and take part in a war of the races on t,he side of Japan and China in order to preserve Mongolia for the expansion of the yellow men.

Herein lies the gravity of the political complications

General Chang Hsun

Known es the "Notorious Monarch Restorer," who Proclaimed the Empire on July 1. 1917, restored the Empe1·or, was defeated, proscribed and sought refuge in the Dutch Legation at Peking, He was recently restored to favor, and appointed GuprdiA.ll of the Jehol Foreat Presei:ve. This requires a force of about 5,000 armed "foresters."

The Argument of the War Makers-The Other Side of the Taonan-Jehol Question

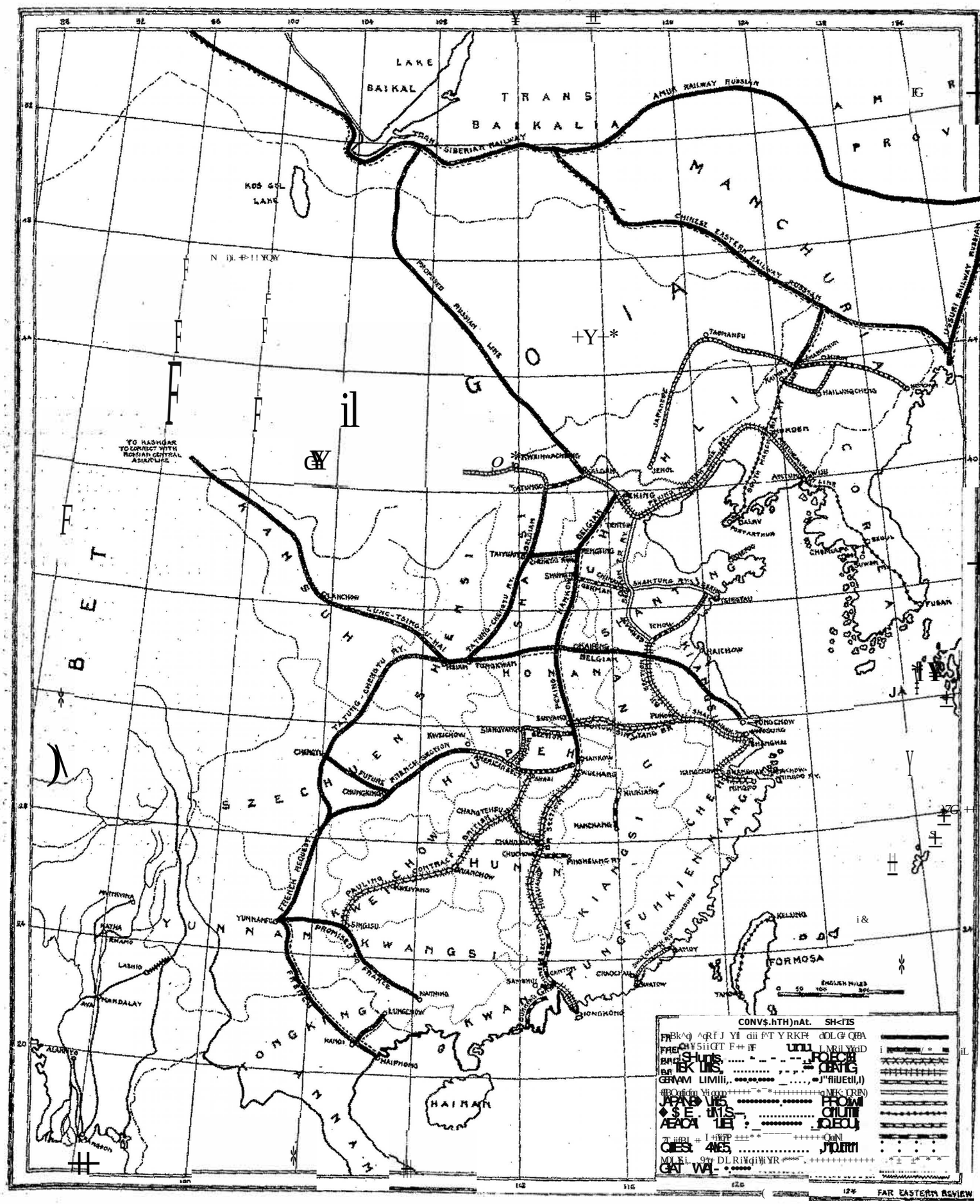


JAPAN'S ECONOMIC GRIP ON MANCHURIA AND MONGOLIA-RAILROADS CONTROLLED AND PROJECTED

The above mnp illustrates the arguments against acknowledgement of Japan's right to defend herself and China against o menace from the direction of Urge.. This was prepared anrl circufated throughout the Unit-erl States by "The Far Eastern Bureau." The line,; mJ1,rking Chinese territory dominated by-Japan are purposely exaggerated. It will also be noted t,hat the Ta.onen-Jehol line is extended beyond Jehol to the vicinity of Peking in order to accentuate the argument that it was devised for the purpoce of <laminating the Chinese capital. In reality, the line from Jehol to a seaport was never defined, though it is presumed tho.tit would terminate at Huluta.o, or in t.erritory boyonrl tho Groat Wnll, where a Russian army could not turn the Japanese flank in the event of hostilities, and place its base at Pott Arlhur in danger. The liries to the south of Peking are also .skilfully rhrawn in order to exaggerate the argument of the "war-makers." This map fa typicn.1 of the type of propaganda circulated in the United States in' order to keep alive agitation making for ultimate hostilities.

China. The consortium ,as organized to establish, amongst other things, the soverei$_{gn}$ty of and to strengthen the central government of China. For all practical purposes Japan has been prohibited from operatirig alone or in conjunction with China to defend herself against a ç,rueilaCe from the direction of Urga." Therefore, China must step into the breach and discharge her international obligations by defending her own integrity. All perfectly proper. We *kl t* face ·the facts. Urga, the capital of Mongolia, has been captW"ed by the reactionary Russian army under Baron Ungern. The Chinese troops have fled. Ten thou and peaceful Chinese, says the report, have been massacred. China is now called upon to defend her territory. The government is bankrupt. There are nq funds to wage success.fu y a campaign in Mongolia. Question, ·n). Will the consortium advance a loan of fifty, Or ·e,.en ·'ten million- dóllars, to enable China to carry <:n the necessary military opo·ations to give effect.to ih; doctrines . (2) In the event that the con.:-3ortiurn refr:ains from financing China in a military campaign in Mongolia., ""•ill the American and British gove1nment.c; uphold its doctrine and dis_patch an army to assist China Great Britain or America cannot ·consistently ·call upo_n -;J$_{ıı}$pan *q* undertake t!Jis task alone after their declaratiom;, withOut.sm'!endering their position anrl recognizing her paramount interest in these re.gions. (3). If a "menace from the direction of Urga" spreads and approaches the limits of southern Manchuria, or occupies territory along the Hne of the projected Taonan-,Jehol railway, will the consortium powers prohibit Japan f 'om taking the necessary steps to protect hereelf and send their troops into t.he region . In other ,vords, how 'far is Japan Cfl>ecfod to expose· herself to attack in order to meet with the desires of the other poWers 1 C'hina's integrity must be

OB>@EHKD HKAF>¥P KLOQE*B>PQBOK COLKQHBO ?V T>V LC@EHK>



POLITICAL RAILWAY MAP OF CHINA

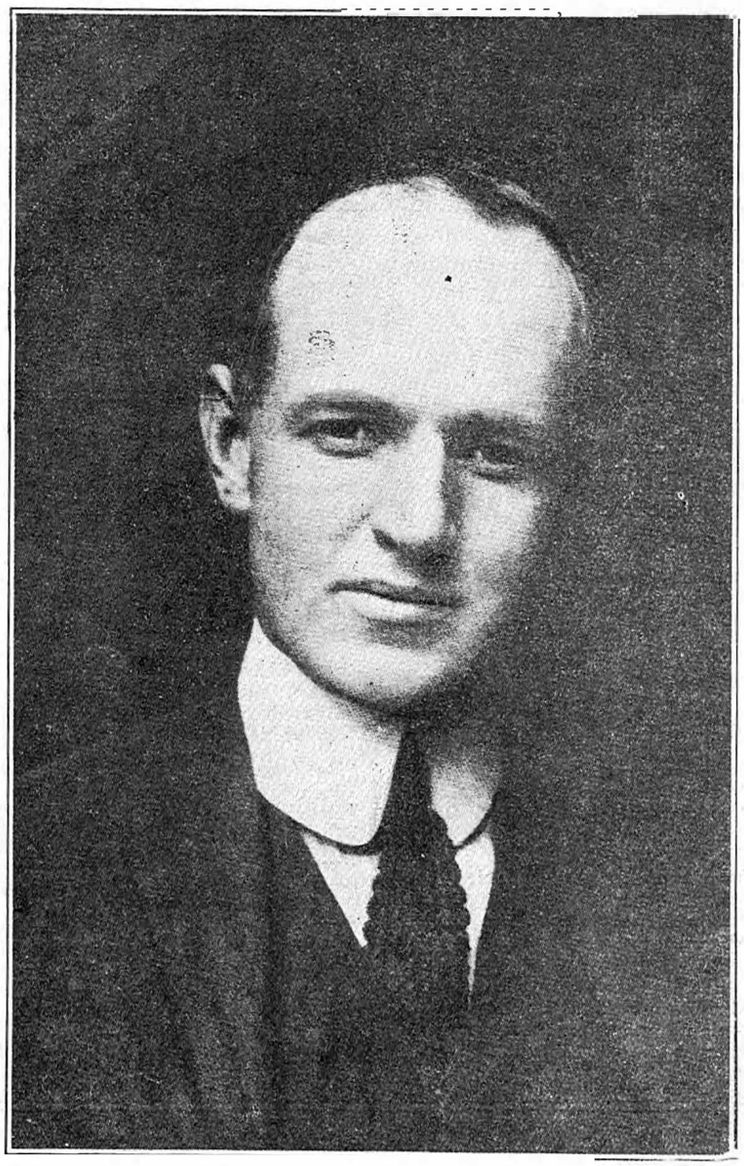
This map was prinred by T u F u EASTERN REvmw, in 1914, to illustratf the political and strategical significance of the Russo.Be1go. FrancO railway contracle,_ whleh divided China by a north and south and. eMt anrl west tru:nk system, permitting Russin to join hands with her Fi-ench Ally on the south and opening up a deep we.tor port at Tungchow for the Lung-Tsung-U-Ha.i {Central Asian) lino. This ffl3() ahb gives a clear idea. of the meaning of the Japonese lines in Manchuria, which are shown to be purely strategic frontiers against tho preaaure of Russia

>iiibof`^ ^ka G^m^k ±Fii J^k`erof^

E^oofj ^k±p M^^k q Clo`b G^m^k q Pbii qeb Plrqe J^k`erof^ O^fit ^v

WHEN the Peace of Portsmouth was signed,_ relati ns between Japan an<l America were most cordial. Japan had fought her great adversary, driven her back beyond the Sungari, and drenched the soil of Manchuria with the blood of her sous. Her reward, the fruits of her victory, consisted of a broken down, busted railway, with its short term lea.se inherited from Russia. 'I'rue, she received the southern half of the frozen island of Saghalien, but the one tangible award was the South Mancliuria Railway, while Russia retained control over her military line and hasc in the nort-h, undamaged hy the war. Japan had no funds even to convert her prize **into** a going concern. She was bankrupt, or almost so. She borrowed the funds in Englanrl and spent them in the United St.ates to reconstruct the railwn,y. She had to work quickly and be ever on the alert to fortify herself against the return of her formidable enemy.

This was the situation, in brief, when J.\iir. Harriman, the great. railway manipulator, conceived his idell, for a round-the-world transportation system, and initiated those fateful and secret negotiations which have since been made **to** serve as the lever to undermine Japan's poi'lition in Manchurht. We could write a hook from our own experiences on. the various ramifications surrounding the Manchurian controversy, but prefer to let the stmy be told by Mr. Willard traight, who speaks to us out of the grave through the pages of the great magazine he created. **In** effect, Mr. Straight tells us that while he was still acting as consul-general, he was at tho same time in correspondt>nce with Mr. Harriman, elaborating a scheme which would nuilify Japan's position in Manchru·ia through competing railway rights.



("Asia")

Major Willard Straight

An American of the Highest IdeaJs and Principles, who, in his zeal to preserve the Integrity of China and Neutrnfoe Manchuria, Laid the Foundstion of Arnerican-Japanese Mis11nderstanding by entering into the Plans of the la.to Mr. Harrimo.n to influence Japan to Sell the South Manchuria Railway, so it could form part of his World-Girdling Transportation Scheme. Mr. Straight Later became one of the Strongest Arlvocates of American Co-oporntion with Japan for tho Advancement of China's Interests. Through his advice, Co-operation with Japan was accepted as tho solution of the Grand Canal Question. Later on, he Drew up a General Plan of Co-operation which was submitted to tpeSto.te Department and the I\femhers of the American Group, as a Guide for future American Financial Acti vitics in China.

Mr. Straight tells us in no uncertain terms, that the Chinchow-Aigun **railway** contract (the counterpart of the Taonan-Jehol line) was to he employed as a lever to compel Japan to sell out her rights **to** the South Manchuria Railway to Mr. Harriman, or, if Japan was unwilling **to** make such an agreement, then the alwr- native line would place her in a "very embarassing position in Manchuria." It is well that the reader should form his own opinion from the facts. We republish in full the story of Mr. Straight, from the February 1921 number of Asia. It needs no comment. The policy of the consort.ium, the whole attitude of America towards these questions mu!'lt undergo a change. We arc confident that the American people when they know the facts, \\ill never go to war against a friendly power in order to further the grandiose schemes \.Yhich originated in the mind of the greatest railway manipulator and stock exchange operator our country has ever produced.

* *

AN AMERICAN IN ASIA

Willard Straight in Far Eastern Finance

By LotLis Graves

The impression that he made upon E. H. Harriman, when the railroad financier visikd Korea in· 190:'>, was directly responsible for Willard Straight's entrance into the financial affairs of the Far East. Harriruan's imagination had been seized hy the vision of an around-the-world Harriman transportation system, with tho Trnns-Siberian Railway a part. of it. It was Harriman of all American financiers who first saw the opportunity for great American development in the Far East and backed his holief with hard personal work and large plans.

"The working out of the Eastern question interests mo and there is much we can <lo to !:let it st rted on more direct ;nd straight-forward lines than heretofore," Ha.rriman 'WTote Straight just before his death after four years of correspondence and relation-ship with Straight in Far Eastern affairs. And in a letter to another he thus recorded_ the reason for his interest. "These finan9ial groups are very uncertain and shift and change with the signs of storm or calm. The development work appeals **to** me more than anything else. After we have determined what we will do, then we can arrange th financing, and hQw it shall be done and. who shall profit by it."

"I unrlerstnnd," wrote Straight in a memorandum, "that the uggestion that l\fr. Harriman make the journey of 1905 to the Orient came from the Japanese governmrnt, ,Yith whom ho had established close relations by viI:tue of the assisfance rendel'ed by him and by Mr. Schiff in co-operation with Sir Ernest Cassel of London, in floating the Japanese loan in New York and London. *?v reason of the Russian def€,at, he hP-lieved* it *might be pos..ible to* maJce *some arrangement for the acqui ition of the Ru,ssia.n Trans-Siberian line.* In July or early August, 1906, assisted by :tl.lr. Lloyd Griscom, then American minii!ter to Japan and Mr. H..W, Denison, an American attached as adviser to the foreign office, Mr. Harriman reached an understanrling with Marquis Ito and Count Katsura, then the Japanese premier, under which Mr. Harriman was to fumish the capital for the reconstruction and operation of the South Manchuria Railway and for the development of various mining, timber and other enh;rprises along the line. These the Russians bad extracted from the Chinese, and the Japanese in turn ha<l tak,m froru the Russians. The ,Japanese were to have a joint interest and political control in this undertaking. Mr. Harriman was assured there would be no hitch, but wa,; advised that nothing definite could be done pending the rf'sult of Count Konmra's negotiations with the Chinese government."

A year later Straight leamP,d from Harriman that he Juul been informed through one of thP lea.ding .Japanese fina: u;iers that the Cltinesc had ..lq approvecl and the JapanPse had detRrmined q deal with the pro!.ilem themselves.

"Mr. Harrima.n's project had not lx>en df'finitd.v turned down, but it was obYions that no farther progress cottld be expected,", worte Straight. • *Prior* tc *rny":departure for Mukden,* in *Aug ust, 1906, Mr. Harriman asked. me lo l,:eep him advised as to railway developments* in *Jfonchuria. He was still determined if possible lo obtain a foothold in* that *reyion to carry out his sche111e.* Ultimately the Japanese govcrnmf'nt arranged to obtain in London the funds with which to finance the construction of their South Manchuria road. The Japanese, much to thci disappointment of Rritish interests, expended the funds which they had obtained in London in placing orders for railwny material in the United States. In doing so, as I understand it, they were par.t.ly influenced by a de ire to make

His Excellency Hsu Shih-chong

Photograph Taken While He \Vas Viceroy of ;\fanchuria. Under hie Direction the Straight-Tang Nogotiatiool!_ for Undermining Japnn and Rusuia in Mao('huria were fnitiated. He is now President of China.

Tong Shao-yi

Photograph Taken Whilo Governor of Mukden, at the Time he was Co-operating with Willard Straight to Negotiate nn Agreement that would Bring the United States in i\fonchuria. as nn offset to Japan and Rus.,ia.

Hsi Liang

The Last)la.nchu Viceroy of)lancburia. Su<lceeding Hsu Shih-chaog, ho signed tho Chinchou-Aigun Contract.

up in some way for the failure to carry out their agreement with :Mr. Haniman."

This decision by Japan to hold fast her claims in Manchuria marked the unfolding of her imperial plan in China. It also marked the ueginning of a long and tedious, but obdurate fight, in which Straight played the leading active part-aimed to prevent Japan and Russia from closing in on Manchuria to the detriment- of other national interests and Chinese sovrreignty. The conclusion five years later of the coutract 1,ctween China aml the six power group_:_ tho ·united States, England, France and Germany with Japan an<l Russia admitted as partners--for joint loans to China, was the fit·st great. rrsult of the fight. The consortium of 1920 is the sc<1uel.

*Qeb pqlov l c qeqf qfdeq _bqf... fk qeb prj j bo l c . 6-4) t fqe Pqp^fdeq^p `lkpri* dbkbo^i ^q J fqhabk+ ¥¥)*) ot kbo^i ^fj qpkp r. b2i^_ifpe ^k >j bof`^k ``l klj f÷ d l qel ia fk J ^k`ekqf^)+ Qeb `l k`obdp ^fj T9Rf il _rfia ^ o^fiol^a t ef`e) ev m\o^iibif. . d qeo) Pj fqe gGdk`erof^ O^fit ^v x<G^m\kbpb& ^ka fqp kl oqebok budpkpfl k il E^o_fk %Or)^pf^k& pel ria kr iifcv qeb pqp^)qq df` `l. . id i l sbo J^k* `erof^ ebia _v Or5pf^ ^ka G^m^k qeolrde qebfo ml. 05bqqfl k l c qefp ô)fiol^a ifkh _bq bbk qeb Qo^kp*Pf_bof^k ifkb ^ka ^k f`b*tobb mq l)f qeb Dr icl c%&fifif+*

"At that time," Straight- wrote, "Loni ffrench, representing Pauling and Company [British contractorsl, and J. 0. P. Bland, representing the British anct Chinc:se Corporation, came to Mukden and secured from the Chinese government the right to build an e.xtensiou of the Chinese rmpcrial Railways [the line from Peking to .Mukden] from Hsinmintnn, north to the town of l<'akumen, 47 miles ctii;tant, with Uie ultimate right to cxtend this road to Tsitsihar [about 400 miles north] ... the Trans-Siberian Railway. [This would have given a railroad connection from the Tr11,ns-Siberian line across Manchuria to the sea, quit independent of the Russo-Japanese line.] I wa:; familia.r \\ith these negotiations. *Qebv pbbj ba qj l)xbo ^k ^)mml oq j fqv d o qeb ob^ifw^qfl k l c J o+ E^oofj ^k¥p mi÷kp ^ka d o qeb `ob^qfl *k l c >kdil *>j bof`^)k*O. . +pf^k `l *lmbj qfl k 7k J ^k`e¥of^+ F¥efp I _bifbsba qj _b bp 0bkqf^i) for F afa kl q dbbi qe^q qeb Rkfqba Pqlqi55 t ^p ÷vrof`fbkqv pqpl*kd mifqf*b^iiv ^il kb qj rkaboq^hb qj `lrkqbo* _^i^k`b G^m^kbpb fkg¯rbk`b+*

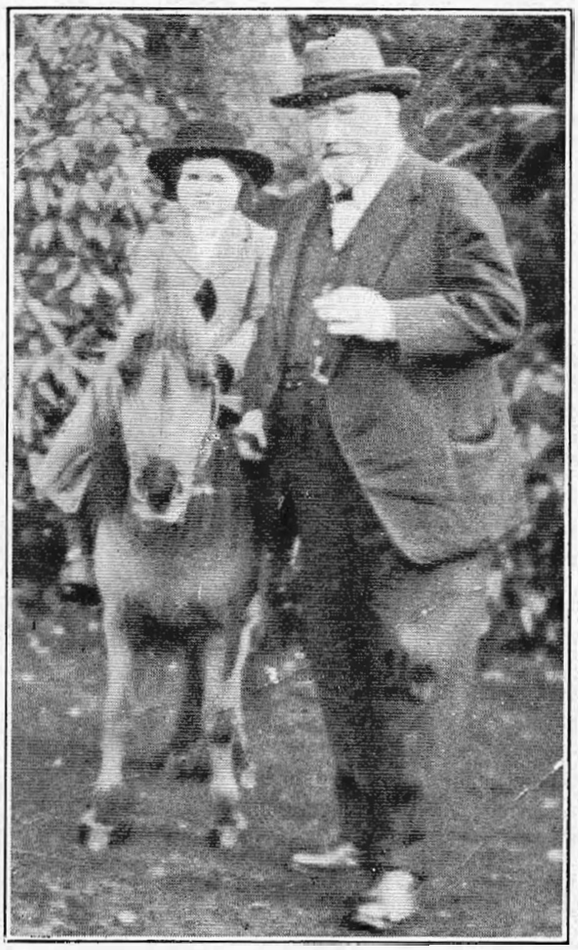
What the building of this· British railroad as a parallel to the Japanese South }fanchuria line might have meant ,POiitically may he judged from a sigrµficant. statement recorded by Straight : :

•'After lunch, Goto's aide [Baron Goto, minist-Or of eommunicat,ion!i] came in. *Eb 5^fa G^m^k t l ria) fckb`bpp^ov) t *fqe t b^ml kp) mobsbkq qeb `l kpqpr`qfl k l c qeb Epfkj . 7kq*rk*C^i`rj bk O^fit ^v+*

The Japanese prQtested to the British, their allies, and the British foreign office withdrew its support from the scheme, which fell by the wayside. But Straight adapted it later to the plan he was working out, as providing the means for joint American-British action in Manchuria under American leadership.

'·I had several discussions with the Viceroy Hsu Sh.ih-chang, now president of China] and Governor [Tang Shao-yi]," Straight wrote, ·'and as a result drew up an outline of agreement, which would give to Am<'rican interest." the contract for a loan of some $20,000,-000, carrying with it the right to establish a Manchurian !Jank to co-operate with the Manchurian government. This bank would he thr financial agent of the Manchurian government in _undertaking mining, timber and agricultural dcvdopment and the construct-ion, of certain railways, among others the linP from Tsitsihar running north to Aigun on the Amur River. *Qefp p`ebj b F5Mki+lo J o+E^o* ofj ^k fk Pbmdpj _bo) . 6-4+ B^oiv fk L`q _bo F ob`bfsboi ^ `^Rb pqjfqfkd qe^q 7qfk^k`f^i `l kafqfl kp fk New Vl oh t qqdb pr`e) _d ro)eq l k b!f qeb G2kq97 qe^q qeb qp^kp^`qfl k t l ria _b fokml)pf_i`+*

This plan put up to Harriman for hacking wa1<Straight's first important contribution to the solution of the Far Eastern problem through American action. He was- convinced of Harriman's intention to pui through a big idea anti he knew that the panic of 1007 meant only a temporary rlelay. In the field, he continued to work in close contact with Tang Shao-yi and to keep the state department and Mr. Harriman fully informed at home.



George Pauling

Ono of Britain's Empire Builder, .A Close Friend of Cecil Rhodes, he Built the Railways of Rhodesiaandin other ways contributed to the development of South Af ica. He had great faith in the future of China. He signed the Chin('hou, Ai$_{gu}$n construction contract, which the Amedcan _Croup was to finance. Recognizing the Injustice to Japan involved in the construction of this railway, ho suhsc>guently complied with the wishe of his government und surrendored his interest in the contract in return for an additional compensation in the Shasi-Singyifu railway contract. He died in January 1919, Beloved hy all who knew him.

The relationship of these two men -Straight, a mere untried youngskr of twenty-seven, ont on the fiPld, anrl Harriman, the grcatest railroad-financial genius of his generation, at home, each working with indepenrlcnt mind and vision, "ith strong confidence in the other and with assurance of America's ability to attain a place of great influence on the Asiatic continent---was a dramatic one. The two stood out alone in the breadth of their vision and resourcefulnesR. All the time Straight in Manchuria, in touch with actual eondit-ions, was working out tJlans and the diplomatic facilities for carrying them out, to be put up .to Harriman. He was confident that, when the Ume was ripe, Harriman had th(, abiding interest and the nerve to put his po\\er behind them. Harriman on the other hand relied with rare confidence on the observing power, vision and good judgment of Straight. So *dob^q* was *qefp `l kqfabk`b) qe^q ^ vb^o ^ka ^ e^ic . +dpo* Harriman *t ^p j ^hfkd pqplkd obmob^bk* *q^qfl k qj qeb Q^cq ^aj fkf)pqp^qfl k qe^q Pqp^fdeq) r*e+ `l k*psfb*dba e¯fj +pbic dk r`e qjl vl ffkd d o qeb ml pq) pej aa _b j ^ab j fkf)pqbo qj (@efk^)*

In 1908, almost a year from the time Straight first put up his proposition to .Mr. Harriman, he was suddenly summoned by cable through the request, of Mr. Harriman to return to the United States to discuss the Ma-nchuril),n financing plans. Ha1Timan had seen that conditions were right financially for reviving the Far Eastern loan. On the night before leaving Mukden-rather, at six in the morning--St-raight signed a memorandum of agreement for :a $20,000,000 _loan along the lines of the discussions of the year before, including a Manchurian railroad.. This ,was a .rough preliminary, not the detailed agreement, which it required two more yt:ars to get.

'·I carried the agreement for nearly six weeks in a small wallet tied about my neck in silk case," wrote Straight. "That memorandum was the groundwork upon which the American group is based."

He was made acting chief of the division of Far Eastern affairs iu the state department soon after his arrival in Washington. He took up with Mr. Haniruan immediately plans for completing the loan they had discu scd.

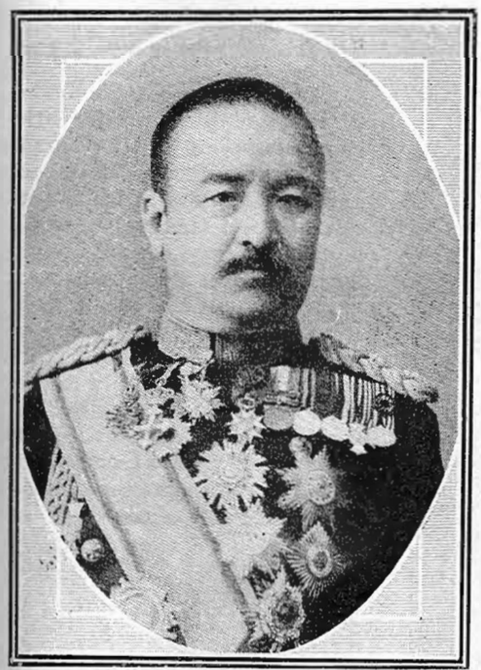
··On the third of Decembm·, 1008, hy Mr. Harriman's dirrction, 1 called upon }fr. Otto Kahn of Kuhn, Loeb & Company and took up with him the question of the loan to China," he wrote. "Prior to my departure from Mukden it was determined that China wai; to send 'J'ang Shao-yi as special ambas..:ador to thank the United States for the return of a portion of the Boxer indernnity, and that, on his a1Tival in America he should complete the negotiations for the lQan the prelimina1·y agreement for which I hrought homf:1 with me. In; the meantime, early in .November, hoth the Empress Dowager and the Emperor Kuang Hsii died suddenly. At .the Pnd of October, moreover, Baron Takahira, who was then Japanese amba.-;sador to Washington, had ·suggested to Presirk,nt Roosevelt and Mr. Root that, in order to prevent any difficulty between Japan antl tho UPited States in tho J>acifie, there should ho an interchange of notes regarding the preservation of the " open door" in China, stipulating that both the United States and Japan _shoulrl mutually respect the other's interest in the Fa1· East.

'·It seemed obvious that Japan was endeavoring to forestall the arrival of 'Tang Shao-yi and the attempt which it was helievcd he woultl make to reach some understanding with the United States, by making it appear through the interchange of such notes that there was a virtual alliance ·between the United States and Japan.·)Ir. Root and President Roosevelt were induee(l to postpone the actual signature of these notes until Tang's arrival. He reached \Vashington on NovemLer 30, the notes were shown him at noon tJ1at day by fr. Root and the not.cs th::mselvcs were signed at fom· o'clock in the afternoon.

"Tang was very much discouraged. On the death of the Emperor Kuang Hsii, his nephew was named as his successor and his brot,hor, Prince Chun, appointed Regent. The Regent hated Yuan 8hih-kai and every effort was made to remove-him from officr. *Yuan, lwwever, was e'!Uleavori n g to holrl* his *position* b*y claiming. qp^q) throw.Jh ¥€^kd¥p negotiations in the Rkfdpa Pq\dpp) eb f`l r ia _b abfo d| secure American support, -which would counterbalance Jcipane,;e domination fk J ^k`if*r of^+* The interchange of notes with Japan, was promptly use<! by the Japanese, who were intriguing Jl.gainst Yuan, to prove that Yua.n had failed in securing American support· and that the United States instead of supporting China against Japan had in reality concluded a virtual alliance with tho Japanc::;c government. Yuan was drivl n froru power early in .January, 1909,. and Tang himself left the United States for London sbortlv afterward. He frlt that any further discussion of the loan was ·useless. The loan negotiations were dropped fort.he time hring."

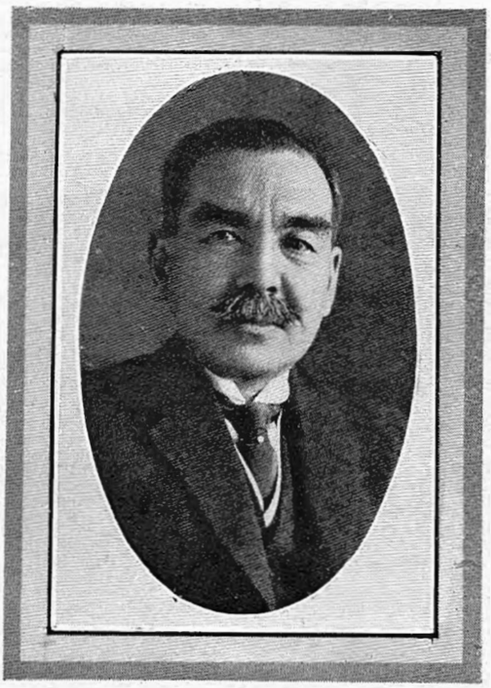
Bub they were dropped only froru thll Chinese encl. Tho American negotiators were, if anything, morn det-Ormined than ever to see things through. Mr. Harriruan reverted to his original plan of 1905-1906 for the purchase of the Japanese and Russian; lines in Manchuria. But during the subsequent confereuccs in the early part ·of 1900, a complementary and alternative scheme evol,·ed. *ThiaS t ^p d| 8!.Ctire +ol j the Chinese ^ definite `l-kqp^`qd o the building of ^)kl qpbo o^fiol ^a fk J ^k`er of^) f`ef`e `l r ia _b used ^p ^ lever d| i11jluence inP. sale of the Jnpnne,;e a11<l Russian ifkb^ or, failing fk qpf^) could be bnilt as ^k alternative liae.* Straight tells of tho::;c dt>velop-. mcnts as follows :

- "While these events were taking plac::c in Washington and China, Mr. Harriman had kept closely in touch with the ;,ituation and my discussions with Tang Shao-yi. In Novomher, Mr. Schiff, who was in dose: touch with Mr. Gregory \\'ilc-nkin, formerly the Russian financial agent in the United States an<l thrn the Russian agent in ,Tapan, had been advised that there was st.ill some possibility that Russia would be willing to sell the Chine;;e-Eastern Railway, if Japan would agree t0 sell her Manchurian line. Mr. Schiff wrote to his frien9-, Baron 8hibusawa, to ask whether the Japanese would be willing, in view of the previous memorandum of a.greement with \ilr. Harriman, to sell the South Manchuria Railway to American. interests, provided the Russians would sell the Chinese Eastern.



Count Katsura

I'remior of Japan in 1900, who with Prince Ito Negotiated with Mr. Harriman for Joint Americ-an-Japnneso financing au<l oporation of tho Sou th Manchurin Rnilway.



Hikokichi ljuin

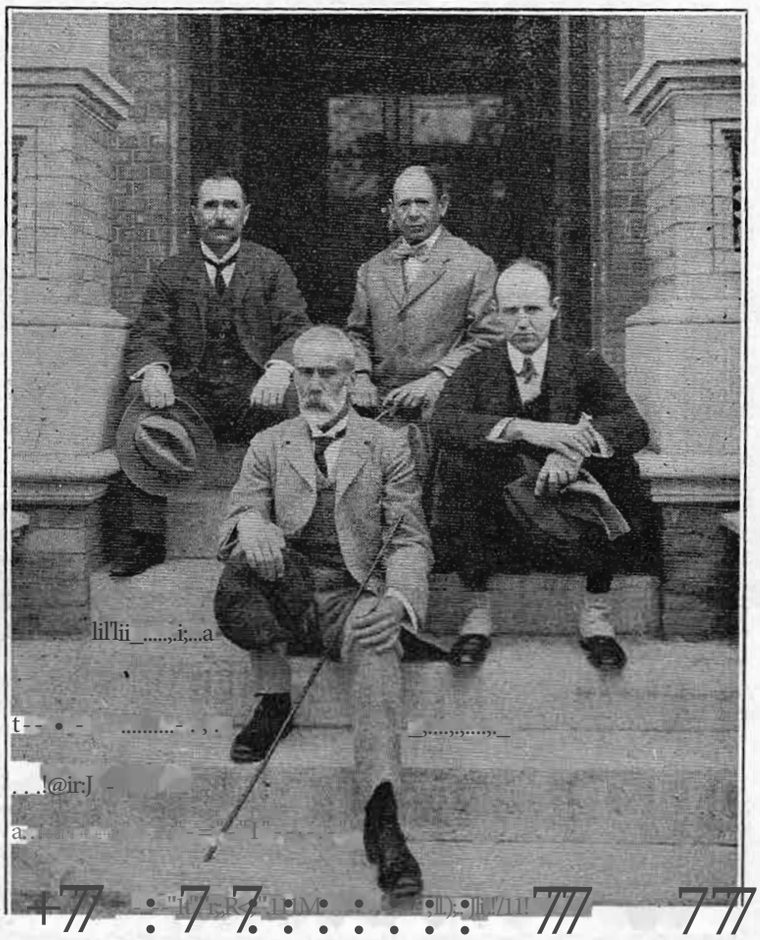
Japanese Minister at Peking in 1910, Who Proposed to The Chinese Government that Jnpan be Permitted to Participate in the Financing and Construction of the Chinehou-Aigun Railway. The Proposal was Rejected on the Grounds that China could not Consult any Foreign Nation about the Development of her Railways. Also Rejected by the Americans.

Prince Ito

With Count Katsura. ho areed to Permit Mr. Harriman to Fumish the Capital for the South Manchurin Railway. Tho Plan wus Rejected by Chinn

"This z,ropoa,ition the Japanese turned dmcn. Early in De&:xember, I prepared a memorandum M to the _^pfp 1tpon which these q l line,a might be acquired. The matter had been taken up with Tang Shao-yi, who had said that Chin11, would be glarl and would cooperate if we could organize an international syndicate to purchase both lines on behalf Qf China, thus anticipating the provision for repurchase of the lines containerl in the original agreement of 1896 between China and Russia. This memorandum I believe formed the basis for the Knox neutralization proposals [for an international syndicate to buy out the Russian and Japanese railroad holdings in Manchuria]."

Here the situation becomes complicated by the introduction of cussion of another loan to enable American financi11,l interest. to take up participation in the huild.ing of the Hukuang Railways in South China. The stak department had been fight,ing for the right of American finance to eurer this loan with the British, French and Germans. There were therefore three ideas moving concurrently in the minds of the Americans. First and immediately came the effort to purchase the Russian railroad in Manchuria. Secondly, there was the necessity for immediate action to enable the United States to take its place in the Hukuang loan. *Thirdly, there was the furulamenwl pl,an in the. minds of Harrirruin and Straight to obtain from the Chi-ne.e a Manchurian railway `l kqp^`q to make the American position secure, whether the RusS'ians or the Cäpane8e soul their railroad or not. Thi.3 conqp^`q l,ater secured,* WM *known as the Chinchou-Aigun · plan.* The negotiation of the contract was to be the first essential in the American position. But no contract with the Chinese could be official without a ratifying edict. And therefore the edict for this contract, told of la,ter in the story, became the key to the whole American position. It was in the development of· this idea for the Chinchou-Aigun Railway that Straight contributed his first big share in the team-work with Harri.man and the group of American financiers now interestc-d.



The Peking Representatives of the old Four-Power Group
J **+Cordes.(German); M. Casena.ve (French}; E . G . Hillier (British); Willard Straight (American)**

"Early in May, Kuhn, Loeb & Company decided to send a representative to China to endeavor to complete the loan negotia.tions which had been undertaken the previous year," Straight wrote. "SubS<„quently it became obvious that unless American financial interests were willing at once to enter the field, the right to participate with the British, French and German interests in the construction of the Hukuang Railways would be lost to the United States. At this time I was working very closely "ith Mr. Robert Bacon of J . P . Morgan & Company. That firm was also thinking of sending a representative to Peking, and, in order t0 secure co-operation between the American financial interests, and to secure as strong representation as possible, it was agreed in June to form the so-called American group, consisting of J . P. Morgan & Company, Kuhn, Loeb & Company, the First National Bank and the National City Bank, and I was designated as their representative. The group was finally organized early in June.

"Mr. Han-iman sailed for Europe at the end of May and I followed at the end of June. In early July we had a conference in London regarding the Hukuang Railways without reaching any satisfactory understanding. Shortly after, I went to Bad Gastein where **Mr.** H.a.rriman was then taking the cure. I stayed two days ,vith him and ta.lked over the ,Far Eastern situation very fully.

"No one I think, was familiar with Mr. Harriman's plans for his Manchurian railway and round-the-world transportation system. I doubt very much if Mr. Kahn knew the details and I am quite sure that none of 1he other interests of the American group, in which Mr. Harriman also had a participa1ion, were at all familiar with his ideas. While in Paris Mr. Harriman had arranged with Mr. X - - t o go to Petersburg to discuss with the Minister of Finance the possible purchase of 1he Chinese Eastern Railway [the northern Manchuria line]. I was to endeavor to secure from the Chinese government the rif,?ht to build a line from the Gulf of Chihli to run north to the Trans• Siberian Railway, poesibly up to the Amur.

"Once an agreement had been reached with the Russians and the right for the construction of a north and south line secured from China, we would have been in position to negotiate with the Japanese. If they had been willing to make some arrangement regarding joint operation of the South Man, churia Railway, it would have been unnecessary to construct another north and south line. If they were unwilling to make such an agreement, the construction of another north and sonth line operating in conjunction with the Russian road would have placed them in a very embarrassing position in Manchuria.

" I reached Peking early in September and on October 2, ,tith Pauling and Company, signed with the Viceroy of Manchuria an agreement for the construction of a line from Chinchou on the Gulf, to Aigun on the Amur, making th0 first step in **Mr.** Harriman's scheme. This line was to be financed in America, and to be constructed by Pauling and Company, who had the original concession from the Chinese government for the line from Hsinmintun to ·Fakumen. We hoped thus to have the advantage of securing Anglo-American co-operation.

"I had received word of **Mr.** Harriman's dP.ath on September 10. Returning to Peking from Mukden, I founrl a letter from Mr. Harriman, writt,en on the way from Paris to Cherbourg, in which he told rue t,hat X - - - h a d come hack from Petersburg, where he had arranged , ,jth Kokovtseff, the minister of Finance, that on his return to Russia from a trip which he was about to make to Vladivostok, he (Kokovtseff) would recommend the sale to American .interests of the Chinese Eastern Railway. Mr. Kokovtseff in accordance with his promise did on his return make this recommendation.

"The arrangement had been made with Russia, the contract secured from the Chinese government, but the directing genius had gone. I cahled to New York, urging the group to get in touch with **Mr.** Harriman's secretary and familiarize themselves with

his plans. I had previously urged that a representative be sent to Petersburg fk order to negotiate with the Russians but this recommendation had been turned down. No one in New York knew precisely what Mr. Harriman had in mind; no one was capable of carrying through his scheme. The group, I undcr-::itand, advised the state department of the arrangement which Mr. X--ha<l made. Short.ly after, they cabled me, asking whether the imperial edict had been issued, ratifying my preliminary agreement with the Viceroy of Manchuria.

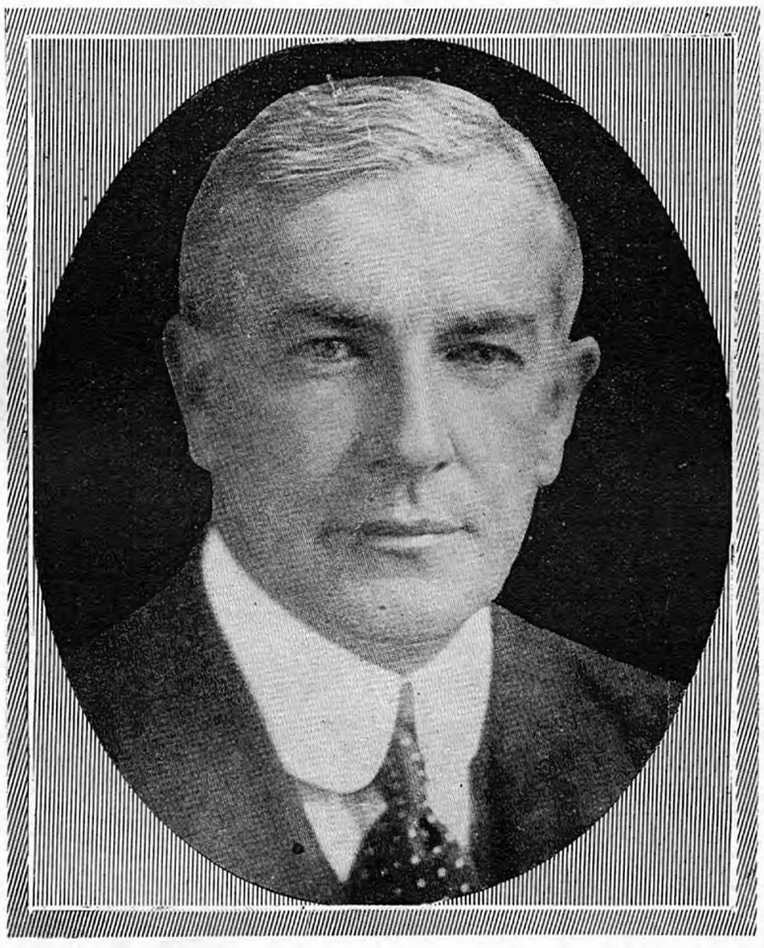
" I replied that from reliable sources I underst-0od that the edict had been issued. [As a matter of fact, it had not, though a secret and vague conditional edict had.] Without cabling the legation, which at that time was fk charge of Fletcher [recently ambassador to Mexico], without waiting for confirmation from me, the state department, on the basis of the report above mention-*ei,* launched tlio neutralization proposals [the invitation sent to the Russian, Japanese, Chine::ie, Brit,ish, French and Gorman governments to join in an international arrangement cl buy out the Russian and Japanese railroad possessions in Manchuria with an alternative proposition to join with the United States in building the Cbinchon-Ngun Railway, the potential rival of the Russian-Japanese line].

" 'l'hc scene had been set, but to carry through the plan it would have been necessary to conduct unofficial conversat-ions with both Tokyo· and Petersburg, to secure the approval of London and Paris and possibly of Berlin, and then, when all arrangements had been made, to make an official proposal. *Fq* would *e^sb _bbk r`kpbo) mol _^_iv) fk ^kv `^pb)* to *e^sb ibcq qebpb kbdl qf^qfl k+ fk qeb* hands *l c* primte *fkaf*sfar ^ip+ *Qeb p`ebj b t ^p ^ii ofdeq _.qq it obnr foba abif ^qb e^kaifkd in-*stead *l c _i^`hpj fqe j bqjd a-p+* In Russia, M Izwolsky, the minister of foreign affairs, was a bitter enemy of Kokovtseff. Also he was anti-American. Jzwlosky desired a closer under,,tanding with Japan and Kokovtseff wished to work with American capital. By handling these neutralization proposals through diplomatic channels, the negotiations were placed in the hands of Jzwolsky and not of Kokovtseff. Izwolsky used the whole scheme and the bogy of an American incited anti-Russian China, which he built upon it, and the manner in which it had be>n presentR.d, to convince his colleagues in the government that the· only protection against American intrigue was a rapprochement with ,Japan. He was successful. The proposals resulted in a rebuff to the United States, the nullification of all work which had been done by Mr.Harriman [in endeavoring to buy or internationalize the Russian and Japanese lines in Manchuria] and the signature of the Rosso-Japanese agreement of July 4, 1910 [for mut,ual co-operation and protection of interests in t,his territory], which practically lost Manchuria and Mongolia cl China."

Whawver declaration Russia and Japan had made in treaties and conventions, what these two did *kl q* want was the "open door" in Manchuria and they quickly came t.ogether to defeat it.

The Knox neutralization proposals came out early in 1910 and immediately throw the Russians and Japanese into each other's arms. But though the Knox proposals forced the Russians and Japanese to refuse definitely to sell their railroad lines in Manchuria and furthermore aroused their intense opposition to the building of the Chinchou-Aigun Railway, Straight and Fletcher kept fight.ing for it with confident hope of success. Ahd success they achieved in the final contract signed by the Chinese a few months later.

"Flet,cher managed to extract the Chin-Ai edict from the Chinese, " wrote Straight, "on practically the same day that the Knox proposals were published, and Wa,shington'::i face for the moment was saved-a little bit." But the final agreement for the loan still had to be drawn.



Henry P. Fletcher

American Charge d'Affaires at Peking, Whose Keen Diplomatic Mind and Support Dominated the Chinchou-Aigun Fight in Peking Which Resulted in Victory for the Group R11presentative, Mr. Straight. Now A sistant Secretary of State.

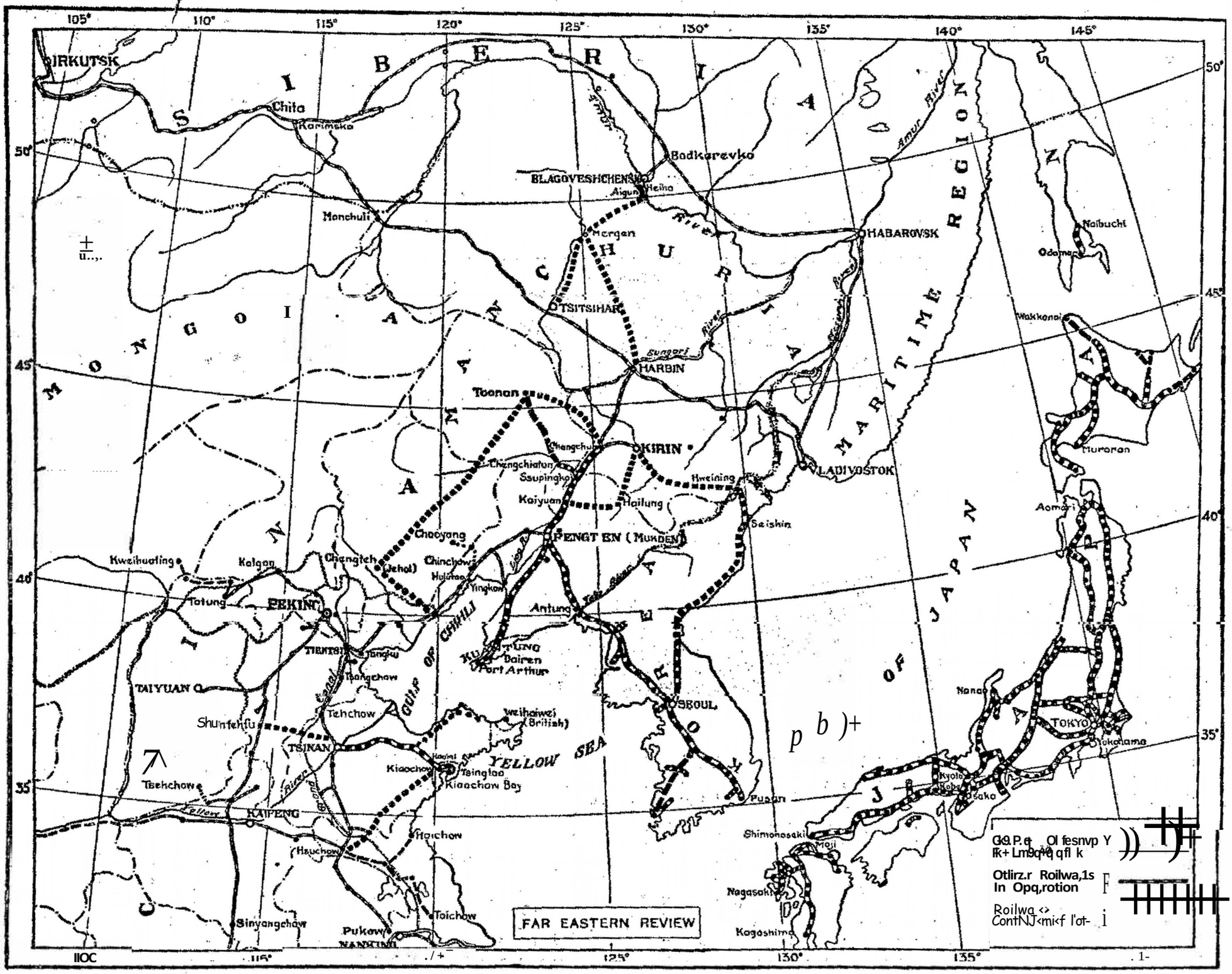
" Our whole play is to work China's fear of Russia and Japan to get our detailed agrcc-lllt:lnt through," St.raight wrow later, "then to take Japan and Russia out of the wav. Had we <lone this first ad then tried to put through out detailed agreement, the Chinese wouJd have laughed at us.

" The Russians have put their foot dmm and the Chinese are in a blue funk. They will not move until forced into action by our government-. Whether Washington can do more than it has done already to help this ungrateful, vacillating, weak-kneed lot of olficials, I don't know. It could if they'd do even a little to help 'emselves."

" Fletcher and I threatencri Korostovetz [Rnssian minister] the other day," wrot-0 Straight on April 17, "that if he didn't get his government to allow our railway to go through without further protest, we'd jolly well have Pauling & Company·and the group open an office in Tehearn and Constantinople and make a little trouble there. He was quite inclined to take us seriously.

" I saw that the Chinese were dilly-dallying and would continue to do so indefinitely if they were let. I saw that, once we had them under agreement, we could go no farther until we had either squared or defied Petersburg. The last course we could only risk as a last resort. Furthermore, our only club to bring the Chinese to terms was a threat to leave them to the mercies of Japan and Russia. So when things were pretty well settled, I announced that I would leave for Russia and New York. If they closed before I WEnt, I should negotiate on their behalf with the Russians ; if not, I should return to New York and report that they were not seriously anxious to build a railway, but were only using us for political purposes." Straight wrote this on April 21.

"Before I left China fk April," he wrote later, "we had completed our negotiation of the final agreement for the Chin-Ai line. 'l'he Russians and Japanese had entered protests at Peking. But. we hoped to be able to reach some understanding with the Russians.



RAILWAY MAP OF NORTH CHINA

To this end I went to Pe1.crshurg in June, 1010, and met the ministers interested. 1 came away convinced that if we start0d t0 build our line and t.old the Russians we would only go as fal· as Taonanfu for the time heing, we would eventually be able l:0 complete the work. This proposition, however, was turned down.

" The Chinese wished **to** know what the American government was going to do about it all. The Russians, however, had clearly stated that, though they couldn't, stop our building the line and had no treaty rights on which **to** base their protest, they would jolly well take it out of China if she tried to cross their Trans-Siberian road at Tsitsihar, and approach the Siberian frontier. ,ve ourselves couldn't fight. The Chinese ,vould have gone ahead if we had promisNl **to** back them up, hut this we could not do, and, had we pushed the matter, we should probably have gone off seot-free and seen Chinit lose a slice of territory or· two.. Our government, therefore, say down in front of the stone: wall to the construction of which it had so largely contributed."

This conclusion of Straight's was set down long after the thc event but during this spring of 1910 hope t)f success for the Chin-Ai plan ran high. This hope was strongly encoutaged by the helief that England, through its alliance with Japan and the influence it could surely exert, if it would, at St. Petersburg, would stand for the "open door," particularly as British interests were directly involvcrl. But instead, England herself yielded.

" It's not the 'open door' but the ·door mat' policy-a.nd China pays," wrote Straight. "An intimation from Sir Edward Grey to Japan that interfercnce with this project woul<l he rPgarded as a serious breach of Japan's trt>aty obligations, and a hint that the London market might tighten against Japan as a re.<iult, would have chastened her at once. Had DmV1ling Street firmly but politely t.old Russia that, if she continued to oppose China's legitimate development in lfanchuria, it would be necessary for Great Britain to reconsider her position all along the line, Russia would have been careful. British weakness has been the signal for Russian and ,Japanese bullying."

The Chinchou-Aigun project was therefore practically dropped. But for Straight it only meant but one battle in the fight and he turned to other projects-the currency loan and the Hukuang loan-to attain the same end.

Baron Goto

First President of the South Manchurio. Railway, whoso Aide soid Jo.pun would Fight to Prevent the Construction of o Parnllel Line

Straight had come to Peking athrill at, the prospect of setting in motion a vast development. The Manchurian loan and the Hukuang loan were matters iruruetliately at hand. Hut he saw them as the brginning of a new era for China-the symbol and the promism of still greater things to be. Not bankers' profits but the sweep an<l bigness of the whole scheme-its meaning to the future of his country and **to** millions of men in Asia-stirred his imagination. Hence the atmosphere of ilistrust, in which he found he had to work fell, at times, like a pall over his spirit.

"What bitterness there is in this China game! " he. wrote in one of his lett-0rs home. "It is sickening sometimes. It is almost impossible for you to realize the pettines.s and suspicion that prevail here, where every one more or less is spying on every' one else. It is the storm centre of world politics, and the foreign community is very small. We eec each other nearly every day-there arc but few outside influences and diversions-and this brings out the little meannesses of human nature.

"Because one man does not invite another to dinner, because A's wife doesn't call on B's, B curses A and blocks his business. A invites B **to** dinner and pumps him dry ; and if B he weak or vain, the chances arc that A will learn things B has no right to divulge. You arc up against the gam< all the time; each party to it finds little respite ; for even our distraction must he shared hy the same fighting crowd, who carry the scrap with thPm to the dinne1·-table and the polo-field."

·Mor . Meddling ,with G^m^k

From tlic .Ch cago Tribune, January 28, 1921

GQ is proper for the department to gt>t an explanation of the Langdon shooting, but the policy of the Unit.ed States towards the westward expansion of Japan is one for the new government to formulate, and it should not he 0mbarrassed by question·s directed hy the present administration to the ,Japancsc government.

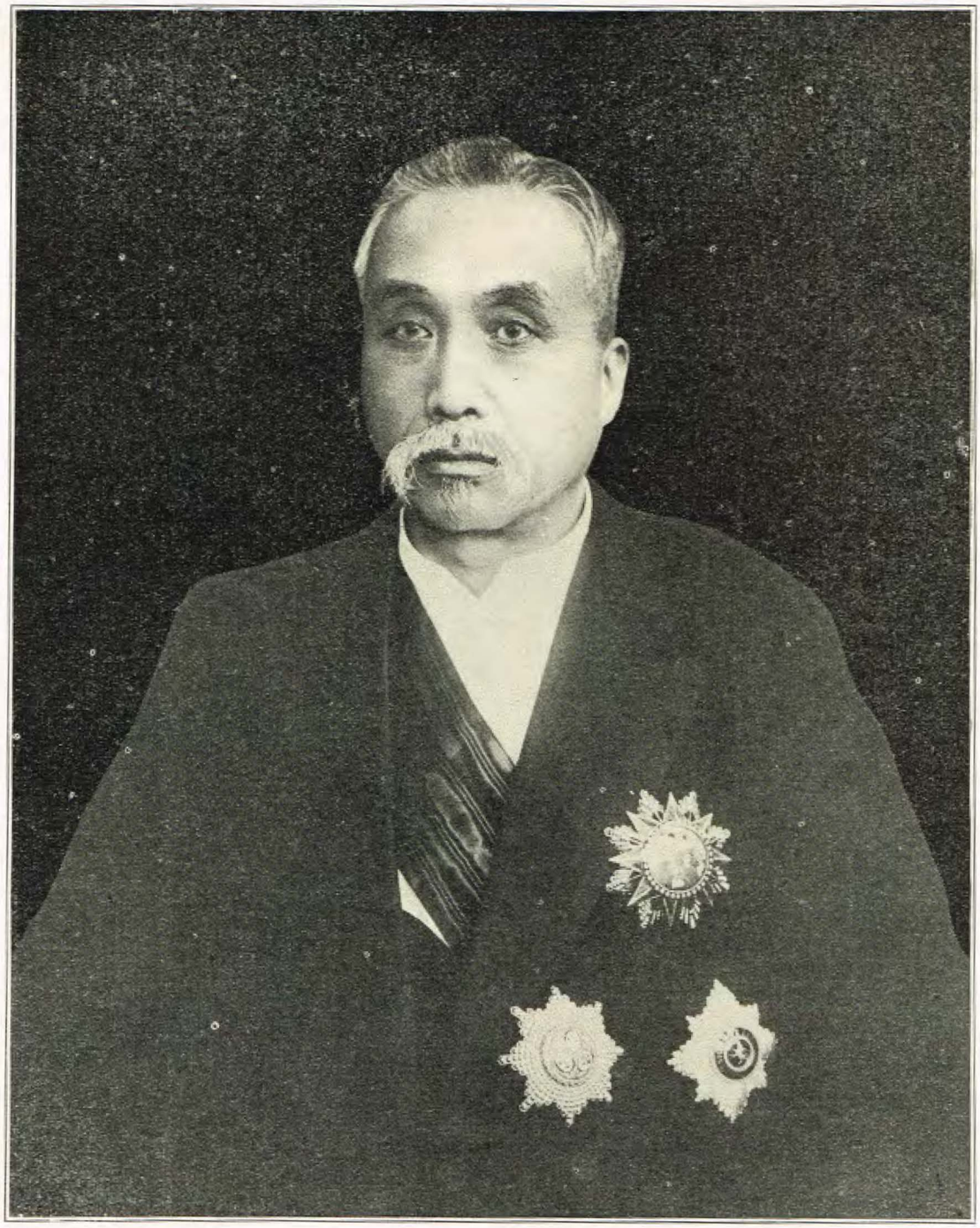
Mr. Harrling may not care to haYe the question asked. Mr. Harding may helieve that it is to the best interests of the United States that ,Japan should ~xpanding at the expense of Asia, an<l that she should turn away from the Am0ricas. We <lo not know and neither does the Wilson government know, and it canuot with propriety anticipate decisions.

Mr. Wilson has been devoted to pin pricking Japan. If the United States has a vaild interest in Asia it is in st,rengthcning and forwarding the traditional friendship between China and the United States. Yet Mr. Wilson, where the real interests of the United States were involved, asked the Unit.I'd States senate to give its moral approval to the transfer of Shantung province to Japan.

The sen.ate would not do this, but l\fr. Wilson insisted upon it. He was willing that Japan should be confirmed in this possession, but when the oc.cupation of Saghalien anrl Siberia by the Japanese came up he protested. The only interest the United States could have in the Siberian advancement of Japan would be related to a policy which has not been formulated. That policy would require the restriction of Japan in 01·der t,hat she should not acquire dominion, resources, and vower which would make her dangerous.

It is in itself a very dangerous policy and would require a strnng hand. If the state department keeps pecking away at Japan it virtually will commit us to this policy and nothing else in the United States, and worst of all our military policy, is not in accord with it.

If it, is America's decision to restrain Japan within her gates thf United States must be big enough for the job. It cannot be done by sticking pins in Japan. Mr. Wilson's ideas with regard **to** Asia have been consistently curious. How his indifference to our friends, the Chinese, can be reconciled to his fervent watchfulness over the Siberians, who mean nothing to us, we do not know. We could not protect the Chinese and deliver them, but we need not go out of our way to sanction the taking of their rich province. We cannot protect the Siberians, and we ought not to go out of our way to make Japan mad by our interference. Mr. Wilson tried to lmt us in just as ba<l as we possibly could get in both directions."



HSU SHIH-CHANG
President of the Chinese Republic

Sketch Map of China Showing Railways

This map shows all the railways in operation and under contract with the consortium groups for construction. We have added in the lines suggested by Dr. Sun Yat-sen as urgently required for the colonization, development and strategic defense of Mongolia, the only spot in the world left for the expansion of the Yellow races.

Engineering, Financial, Industrial and Commercial News

AVIATION

High Cost of Flying.—The Paris correspondent of a London financial paper states that China is to place a loan for 500,000,000 f. at 8 per cent. in Paris. Three-fifths of the total (300,000,000 f.) is to remain in France in payment for aviation material.

Aviation School, Japan.—A new aviation school is being established at the Amihara aviation ground, Kasumi Lake, Iboraki prefecture, at which the twenty new British aerial instructors will commence their work.

Hydro-planes on Upper Yangtze.—A scheme is being launched to start a hydro-plane service between Ichang and Szechuan ports.

Some time ago a hydro-plane was tried at Nantao by a returned student from France, who will use the same machine in an attempt to make a flight on the Yangtze River between Ichang and Chengtu. The machine is a French 1916 type, and is capable of flying 140 li an hour or from Ichang to Chungking in ten hours. Thirty passengers and mails can be carried on each trip, the expense of which will about $700. Each passenger will be charged $60 per trip and this together with mail carrying fee is expected to bring in profits which will in a short time repay the cost of the machine, $30,000.

Should the scheme prove to be successful, it will greatly facilitate traffic and other communications between Ichang and towns in the interior of Szechuan, and will prove a great convenience to everybody concerned.

Long Distance Flight in China.—With the aquiescence of the Chinese government, the war Office has decided to carry out in early May a long-distance flight between Tokio and Changchun, covering the distance of 1,600 miles.

Trans-Pacific Flight.—The proposed trans-Pacific aerial flight contemplated by the American naval office, which is attracting great attention in the world, will be carried into effect during the coming summer. Twenty-three large machines will be used. It is understood that the American naval authorities will place eight torpedo-depot ships on the ocean, one every hundred miles, to look after the safety of the aviators. The 23 aeroplanes will start together, and proceed to Hawaii first.

Passenger Flights, Peking.—Under the auspices of the bureau of commercial aviation of the air department, air touring over Peking has been inaugurated. The planes used are the ten-passenger commercial vimy, piloted by Major Patterson, an extra charge will be demanded for the privilege of riding in the cockpit with the pilot. Twenty dollars is the price for a ride over Peking lasting about a half-an-hour, while only half as much is asked for local flights. Five dollars is the amount that must be paid for the pleasure of riding beside the pilot.

The Nanyuan aerodrome, which has been especially fitted up for the purpose of commercial flying, is some six miles to the south of the Yuen Ding Men. There is a rough road to the field, and there is now a restaurant for the refreshment of the passengers.

Flights take place three times a week, on Tuesday, Thursday and Saturday, with three flights a day. The flying begin at 2 p.m., with three flights at intervals of half an hour, the Peking trips beginning at two and two thirty, and the local trip at three.

British Aviation Experts to Japan.—At the invitation of the Japanese government Mr. Oswald Short, the pioneer airman, has left England for Japan, and a number of *employes* of Messrs. Short Bros., seapleane builders, have also left for Japan to assist in carrying out a contract with the Japanese government. They are travelling with a large cargo of seaplanes. Further, some ten British civilian pilots and aeronautical engineers, headed by colonel the master of Sempill, will leave in about two months for Japan to instruct Japanese Navy pilots and engineers.

Aviation School, Amoy.—It is reported that several Chinese overseas are planning with certain American capitalists to found an aviation school at Amoy, Fukien, to train Chinese mechanics. Foreign instructors will be engaged.

The first Airship for Japan.—Airship ordered by the Japanese navy arrived from England in April. It is equipped with two motors and can make a speed of 60 miles per hour carrying five passengers.

AUTOMOBILES

Proposed Motor-bus Services, Kowloon.—The Vehicles and Traffic Regulation Ordinance of Kowloon contemplate a service of not less than 15 motor vehicles, each having a carrying capacity of 19 adult persons, including the driver and conductor—two front rows to be reserved for first class, and the remainder for second class passengers. Four routes are specified: (1) Kowloon Ferry to Shamsuipo; (2) Hunghom to Kowloon Ferry; (3) Hunghom to Shamsuipo; (4) Hunghom to Kowloon city.

Nakaya Automobile Company of Shikoku, Japan, recently inaugurated a new service between Ikeda and Kawanoye to connect with the main line railway trains.

BRIDGES

Bridge Construction at Hakone.—In the reconstruction of the Sakawa bridge at Hakone Y.238,000 will be expended.

New Bridges, Tokyo.—A scheme at an estimated cost of Y.1,400,000 is planned by the municipality of Tokyo for the construction of a thousand bridges. Three hundred of the bridges now of wood are to be replaced by iron-framed structures.

Arakawa River Bridge.—A bridge is being built over the Arakawa River on the Tokyo-Marita Tram line at a cost of Y.600,000.

Hangchow-Ningpo Railway Bridge.—The German firm, Diederichsen & Jebsen, had a contract with the Shanghai-Hangchow-Ningpo Railway for the construction of a bridge at the Tsao-o-kiang River. It is now decided by the railway authorities to cancel the contract owing to its non-fulfilment in consequence of the war and the contract will be taken by a British firm.

BUILDINGS

Tokyo Woman's University, presided over by Dr. Niitobe is receiving funds from the United States for the erection of a new building. Y.1,200,000 has been donated to date and land near Enokashira has been purchased for Y.250,000. Building will be commenced this autumn.

New Housing Scheme, Osaka.—One million yen have been borrowed from Osaka city authorities by the Kitaminato Land Co. for the purpose of erecting 445 new houses in the neighborhood of Seiseh-ji River, Osaka. Y.1,300,000 will also be spent on building 650 houses at Suginami Mura.

New Scientific Laboratory to be built at a cost of Y.1,000,000, has been decided by a group of Tokyo professors.

New Schools, Japan.—A new girls' school will be built in Osaka during this year at a cost of Y.218,487. The sum of Y.13,500 will be expended in enlarging the Wakanoura School building.

New Engineering College, Tokyo.—A new building on which Y.1,500,000 will be expended will be erected by the Tokyo imperial university in which to train and produce engineers.

New Hotel, Tokyo.—The Toyo Kisen Kaisha plans to erect a large hotel in front of the central station at Tokyo. Y.10,000,000 will be appropriated for the purpose.

New Building, Osaka.—The Osaka communication bureau will construct a new building at Itchome, Tamai-cho, Kita-ku, Osaka.

New Band Stand, Yokohama.—An expenditure of Y.70,000 has been decided upon by officials and leading citizens of Yokohama for the construction of a new band stand for the Yokohama Park. A concert given a week ago under the auspices of the newly organized musical society netted more than Y.3,500 for the new enterprise.

Tokyo Peace Exhibition to be held in Tokyo during March of next year, will be the largest exhibition of its kind ever held in Japan, according to the plans now being formed under the direction of Dr. Sano, who is in charge of the construction of the buildings.

The exhibition grounds will cover two blocks. The first of these covers 50,000 *tsubo*, which will include halls for educational, agricultural, electrical, forestry, chemical, industrial, dyeing, fine arts and botanical exhibits. The entrance will be through a large decorated arch, 120-ft. high.

The second block covers 60,000 *tsubo*, with the Shinobazu pond as the centre. The Colony Hall, bandstand, halls for foreign products provisions, aquatic products, stock breeding, horticultural, mechanic, aviation and communication exhibits will fill the ground. The pond will be beautified with electric lamps and poles.

Special cable cars will connect the two blocks of the exposition grounds.

Central Railway Station, Peking.—A central union railway station is to be built in Peking at a total cost of $3,000,000, under the direction of the engineer-in-chief of the Peking-Hankow Railway. It will be located on a site east of the Temple of Heaven. When built there will be through connection between Hankow and all Chinese railway stations in the north.

Provincial Exhibition, Nanking.—For the purpose of arousing public interest in industry the provincial government of Kiangsu is preparing to hold an exhibition in Nanking of the commercial products of the sixty districts of Kiangsu on the 10th of October, 1921.—*Chinese press report.*

CONSTRUCTION

Yawada & Co.—Construction engineers have established offices at 12 Nichome, Hama-cho, Nihonbashi-ku, Tokyo.

Railway Wharf, Hanyang.—The Peking-Hankow Railway proposes to build a wharf at Hanyang.

The Taisho Mining Co., Ltd. was organized recently with a capital of Y.500,000 with offices at 19 Nichome, Kaga-cho, Ichigaya Ushigome, Tokyo.

The Rasa Phosphorous Mining Co., of Osaka, has opened a branch at 1 Itchome, Yuraku-cho, Kajimachi-ku, Tokyo. Its capital is Y.1,500,000 fully paid up.

Japan Coal Enterprise, Saghalien.—A semi-official company with a capitalization of Y. 80,000,000 of which the Japanese government will own one-half, is to be formed for the exploitation of the mineral deposits of Saghalien. The island is believed to have some of the richest coal deposits in the world, the estimates of experts as to the extent of the deposits varying from half a billion to seven billion tons. The company will also improve ports and build the railways needed for the marketing of the output.

The Nippon Industry Co., Ltd., with a capital of Y.150,000, will engage in mining business. Its office is at 5 Sanchome, Yuraku-cho, Kajimachi-ku, Tokyo.

The Kyowa Coal Mining Co.—Has been established with a capital of Y.50,000, quarter paid up. Offices at 1 Nichome, Minami-maki-cho, Kyobashi-ku, Tokyo.

The Miike Coal Mining Co. with a capital of Y.7,500,000, half paid up, will soon commence operations. Offices, 1 Minami-maki-cho, Kyobabashi-ku, Tokyo.

New Coal Mines, Japan.—The Daido Industrial Company, of Osaka, recently commenced coal mining operations in the Ayabe-machi district of Kyoto prefecture.

Another Mining Monopoly.—With a view to placing all the undeveloped mines in Chihli under the control of the provincial government, Tuchun Tsao Kun sent a petition to the presidency for the establishmont of a mining administration bureau on the lines of the government mining bureau of Hupeh.

Graphite at Laiyang.—A deposit of graphite suitable for lead pencils has been discovered in the northwestern part of Laiyang Hsien, Shantung, at a village called Yuehsoih. The owners are proposing to open the mine under the Chinese bureau of mines regulations for the exploitations of a second class mine.

As these regulations state that a second class mine can be operated only with the consent of the people of the immediate district, a number of the progressive younger gentry of Laiyang district have formed an association pledged to either compel the operators to devote 2 per cent. of the proceeds of the mine to education within the county or to obstruct the operation.

Tin in Johore.—The firm of Messrs. Sime, Darby & Co., report the discovery of tin in Johore and claim that the find is more valuable than any hitherto made in Malaya.

Canton Mining Bureau.—A bureau of mines has been established with offices in the Treasury Building. This bureau will control all the mines of the province and issue permits in accordance with the mining laws.

Mr. Tung Chic-yi, a well-known miner and capitalist in the Straits Settlements, was appointed chief of the bureau and a place on the second Maloo in Tung Kuan has been secured as headquarters.

With his wide experience in mining enterprises in the Straits Settlements, Mr. Tung is a very capable man for the position. Great confidence is placed in him by the military government to assist in the development of the vast mineral resources of the country.

Kungchangling Iron Mine.—An agreement was concluded between Mr. N. Iida (a Japanese) and the Fengtien provincial authorities to work the iron mine in Kungchangling in Fengtien province under Sino-Japanese joint management. This took place in May, 1916. The Peking government gave sanction to the enterprise, and preparations for beginning mining work were taken up at once. The Peking government however, failed to hand down a formal permit, much to the impediment of the work. Military Inspector Chang-tsolin of Manchuria has been pressing the Peking government from time to time, and we hear, the desired permit has been issued by the department of the agriculture and commerce.

According to reports received from Fengtien, the Japanese "San Lin" Company has formed a corporation with the provincial authorities for the operation of these mines. A railway is to be constructed from Mukden to Kungchangling and will then be extended to Liuyang. Two iron bridges are to be built and tunnels constructed. It is stipulated that all iron ore is to be sold to Japan.

Kungchangling is situated at about 22 miles southwest of Chiaotou on the Mukden-Antung Line, and its mining zones consist of Huangnikou section comprising 698,725 *tsubo*, Kungchangling section comprising 3,696,881 *tsubo*, and Talatzu section comprising 2,328,484 *tsubo*. Its total iron reserve is estimated at not less than 200,000,000 tons. No modern equipment, worth mentioning has yet been installed. The result of analysis of the rich ore mined thereat is as follows:

Iron	71.200 per cent.
Silicic acid...	0.320 ,,
Sulphur	0.024 ,,
Phosphorus	0.017 ,,
Specific gravity	4.5-4.7 per cent.

Mining Industry, Japan.—The number of applications filed with the authorities for mining rights during January and February of this year stood at 1,591 only, while that of the corresponding period of last year was 3,732. The copper industry has suffered the severest blow. Coal mining has also suffered and the number of applications presented to the authorities during January and February reached 467 only, a decline of 1,484 as against the same period of the preceding year. It is expected that the output of coal for the current year will show a marked decline. On the other hand, petroleum mining is being carried on rather prosperously.

MINT

Java Mint.—The erection of a separate mint for the D. E. Indies is being considered. Mr. Vissering, president of the bank of the Netherlands, is in favor of the creation of a special Indian guilder, to be called "rupee" for use in the colony.

OIL

Taiwan Oil Field.—The 18th well of the Hoden Oil Company at Shinchiku, Taiwan, sunk to a depth of 140 feet, suddenly spouted at the rate of 20 *koku* in two hours.

Japanese Petroleum Notes.—The Nippon Oil Co. has succeeded in increasing the output of its oilfields in Akita prefecture since last spring in order to make up for the gradual decrease of the output in the Echigo oilfields. The output of the Kurokawa field has recently increased to over 1,400 *koku* daily. The new oilfield at Uruyama is very promising, ten wells producing about 230 *koku* daily. Other oilfields at Kuroiwa, Katsurada and other districts are also reported to be promising. The total output of the wells in the possession of the company, says *Reuter's* trade service, at present exceeds 2,500 *koku* a day, an increase of about 500 *koku* compared with last spring.

In the island of Sakhalin, a syndicate recently organized by the Nippon Oil Co., the Hoden Oil Co. and Kuhara Mining Co., and other interests, is pushing further developments, and at five points along the sea-coast of the island, wells are being drilled. So far, however, no commercial oil supplies have been met with. In Borneo it is reported (and we give the report as received, and with reserve) that a party of Japanese sent out by the Kuhara Mining Co. on the strength of its acquisition from a British Borneo company of the right to exploit petroleum districts in North Borneo, has met with success. The presence of good pools has been proved and wells are now being drilled.

The total amount of petroleum produced throughout Japan during last year reached 3,605,000 *koku*, a decline of 3,000 *koku* as compared with the preceding year. The details in comparison with three preceding years are as follows:

	1917	1918	1919	1920
		(In 1,000 *koku*)		
Crude oil ...	2,600	2,235	2,072	2,084
Naphtha	125	147	148	146
Illuminating oil ...	456	308	244	185
Light oil	615	656	580	615
Machine-oil ...	353	347	366	390
Fuel oil	549	332	198	185

The Asahi Petroleum Co., Ltd. has been organized at 26 Minami Konya-cho, Kyobashi-ku, Tokyo, to operate a refinery.

The Taiyo Petroleum Co. will increase its capital from Y. 5,300,000 to Y. 6,500,000, for extensions in their business.

The Yushui-Shokai has been established for the purpose of developing oilfields. Office at 1 Itchome Yuraku Ano, Kajimachi-ku, Tokyo.

Japanese Prospect Borneo Oil.—Following an investigation made by the South Seas Exploitation Union, organized by Messrs. Kuhara and Company, of Osaka, the Mitsubishi Company and Messrs. Suzuki and Company, of Kobe, it is stated that the Kuhara Mining Company acquired petroleum concessions in North Borneo last year, working these conjointly with the Hoden Oil Company and the Rising Sun Company. Kuhara and Company drilled about a dozen oil wells during 1920, but they did not yield satisfactory results. Though the company is said to have lost £500,000 on these first wells, they will sink about twenty more during 1921.

RAILWAYS

New Railway Loan.—To facilitate the transportation of coal the Kailan Mining Corporation submitted a proposal to the ministry of communications to double track the Peking-Mukden Railway between Tangshan and Shanhaikuan. Arrangements are now being made to commence work, and in order to provide funds the ministry of communications are negotiating with the Peking Syndicate for a loan.

Inner Mongolian Railway.—It is reported among Chinese military men that for frontier defensive purposes, the high authorities in Fengtien and Heilungkiang have approached the Peking government recommending the construction of the proposed Chinchow-Aihun trunk line which was dropped on account of the joint opposition of Russia and Japan some years ago.

Shimonoseki Ferry.—The railway department has decided to build two ferry boats with a view to improving the ferry service in the Shimonoseki Strait. When they are completed the squadron of ferry boats there will have a capacity of carrying 500 freight cars a day.

Chinese Engineer Honored.—The erection of a bronze statue to the late Mr. Jeme Tien-yu at Pataling, on the Peking-Suaiyuan Railway is proposed by Chinese railway officials, as a tribute to his memorable services as Engineer-in-Chief of the Peking-Kalgan Railway, the only railway under complete Chinese control.

Chinchow Chiaoyang Line.—The survey of the Chinchow-Chiaoyang railway line has been completed and construction work begun. The line starts at Chinchow on the Peking-Mukden line and ends at Chiaoyang, Inner Mongolia. The line will be operated as a branch to the Peking-Mukden line and the expenses for the construction will be provided from the income of that railway.

Hukwang Railway.—The survey of the 500-li extension of the Hankow-Canton railway from Hunan to the border of Kwantung being completed, President Yen of the railway, now in the United States, is reported to be trying to raise funds for its construction. It is thought he will be unsuccessful, however, as the United States is a member of the new loan consortium. In the meantime, preparations are being made for the purchase of the necessary land.

Chekiang Railways.—The Tuchun of Chekiang is anxious to employ his soldiers to build the railway from Hangchow to Gyiuchow.

The treasurer has paid the surveyors of the new road from Hangchow to Foochow the first instalment of $6,300, and no one is to get more than $2 a day.

Shimonoseki Tunnel.—The geological survey of the sea beds in the Shimonoseki Strait is practically finished.

The survey was started in the financial year 1919, 1920 by effecting the boring of the sea beds at seven points. Lately the depth of 100 to 120 feet has been reached and it is now ascertained that at most points the sea beds are of the same strata and that the tunnelling work can be easily proceeded with, it is stated.

On the strength of this result, experts are now being commissioned to frame a working plan for tunnelling while at the same time preparations will be pushed for actual works. According to a report from an official source, the preparatory work will be finished in the financial year 1921-22.

In the year 1922-23 the actual boring of the sea beds will be commenced to have an under sea tube which will serve to connect the Kobe-Shimonoseki Railway line with the Kyushu Railway terminus without the medium of the ferry service as at present.

Pending the formulation of the working construction plan no particulars about the tunnelling works can be obtained, but it is stated that boring will be effected at the depth of 150 feet from the sea beds.

Li Hsien Coal Mining Co., Anhuei.—The Li Hsien Coal Mining Co., Hsien-chen, Anhuei, operating the coal mines in Feng Wang Shan mountain, having an output of about 70 tons of coal per day, will build a light railway connecting the colliery with the sales department, a distance of about three li.

Japan Orders Locos.—Experiments having proved satisfactory, it has been decided to order 200 new locomotives from the Kawasaki Dockyard, the Hamamatsu Government Works, the Japan Car Co. and other large locomotive builders.

New Station and Line, Japan.—To build a station at Suita the Kobe government railway office will expend Y.500,000 and for constructing the Joto line Y.700,000 will be spent.

New Lines, Japan.—Permission has been granted for the construction of railways between Kitakata, Fukushima prefecture and Yonezawa, Yamagata prefecture, also the building of another line between Hawatoubetsu and Okibe, Kokkaido and still another between Hahamatsu, Shidzuoka prefecture and Tatsuo, Nagano prefecture.

New Locos, Japan.—Locomotives with a wheel diameter of 5 feet 9 inches, six inches larger than the size of wheels on ordinary locomotives, are to be used on the Tokyo-Shimonoseki Railway.

Harbin-Aigun Railway.—There have been frequent reports in the *Chinese Press* to the effect that the Chinese government has cancelled the agreement made sometime ago with the Russian interests for the construction of a railway from Harbin to Aigun via Mukden and connecting Tsitsihar with Mukden, and that this line would be built by a Chinese company. The ministry of Communications states that there is no truth in this report.

Improvements, Shidzuoka.—Extensive plans are being prepared in connection with tunnel building, quay construction and tram lines by the transportation office of the Shizuoka prefecture. It is expected that the sum of Yen 15,000,000 will be used for the purpose.

Paotow Extension, Peking-Suiyuan Railway.—The cost for building the Paotow branch of the Peking-Suiyuan Railway is estimated at about $5,120,000.

Proposed S.-N.-R. Branch.—Chi-tze-yen is a busy market, situated to the east of Changchow, Kiangsu, a city located on the Shanghai-Nanking railway, but there is no connection by rail between the cities. The residents of Changchow have now raised a fund and have asked the Shanghai-Nanking Railway board to build a short branch line from Changchow to Chi-tze-yen.

Hangchow-Mokanshan Branch of S.-H.-N. Railway, Mokanshan.—The S.-H.-N. board is planning to build a branch line from Hangchow to Mokanshan, a distance of about 30 miles.

Steel Rails for P.-S. Railway.—A lot of 85-lb. steel rails has been purchased by the Peking-Suiyuan Railway for the Cho-tze-shan-Suiyuan section of the line. It is expected to complete the construction of the section in May of this year.

Car Factory, Java.—In one of the harbors on the north-coast of Java a German concern intends to erect a railway-car factory.

Ssupingkai-Taonanfu Line.—The Ssupingkai-Taonanfu Railway intends to commence work on the extension from Chengchiatun to Taonanfu from 1st April. 3,000 people from the famine stricken district in North China are to be given employment, and sent back to their homes after the completion of the work.

Hankow-Canton Railway.—Owing to the lack of funds, construction work on the Hankow-Szechuen railway will be suspended, but the government will immediately take up the building of the Hankow-Canton line. In order that the Hupeh-Hunan section will reach the important city of Hengchow, the government has ordered the administrations of the Peking-Mukden, the Peking Mukden, the Peking Hankow, the Tientsin-Pukow Peking-Shui-yuan railways to supply funds as follows.

The Ching-Han line will set aside sum of one hundred and thirty thousand dollars per month, the Cheng-Feng and the Tsin-Pu lines one hundred and twenty thousand dollars per month each, while the Ching-Shui line will only subscribe thirty thousand dollars per month, total four hundred thousand dollars every month, from their surplus receipts, for the immediate construction of the Chuchow-Sintzelin section in Hunan. It is estimated that the sum of fourteen million dollars will be required during th first three years while the building of the Sintzelin-Hengchow line will require about seven million dollars for the fourth and fifth years. It is reported that within five years, the Chuan-Yueh-Han trunk railway will reach the Kwangtung frontier and then it will connect with the Canton-Samshui section in Kwangtung province. The government has been forced to do this because there is no hope of any foreign loan for the construction of this most important trunk railway in China and also its completion will render the reunification of the North and the South of China much easier and earlier as better communications will improve the political situation.

Locomotives for Russia.—At present there are 1,700 locomotives under construction for Soviet Russia in foreign countries. 1,100 of these locomotives are being built in Sweden and 600 in Germany. The German locomotives will be ready in May and those of Sweden, in August. Besides, there is a big order for various railway supplies placed in Germany.

Proposed Tienpaoshan-Tumen Railway.—In 1916 a proposal was submitted to the government by Mr. Wen Loo of Kirin, backed by certain Japanese financiers, for the construction of a railway from Tienpaoshan, near Antung, to the Tumen River. A sino-Japanese company was to be formed with a capital of Y. 2,000,000, half of which was to be subscribed by the Chinese and the other half by the Japanese. It was proposed that the shares should be Y. 1,000 and that half of each share should be held by Chinese and the other half by Japanese. In that year the government was adopting a pro-Japanese policy and the principle of the scheme was agreed to. Since then five years have passed and nothing further has been done in the matter, but it is now understood that Mr. Wen Loo who arrived in Peking recently, intends to approach the government again on the question. Owing to the complicated character of the proposed company, the government will reconsider the whole scheme before any steps are taken.

Locomotive and Waggon Tender.—The Chinese banking group, located at the Peking Bankers' Association, Chienmen, Peking, announces that tenders for the supply of materials as described hereunder will be opened at the head office at 2. p.m. on 28th June, 1921.

30 locomotives, Prairie type, 2 locomotives, Mikado type, 3 locomotives, Pacific type, 6 locomotives, English type, 200 40-metric ton all steel high side open waggons. All for the Peking Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Hangchow-Ningpo Railways.

Elevated Railway, Tokyo.—An elevated railway, two tracks, will be built between Manseibashi and Uijeno at a cost of Y. 24,000,000.

Tokyo Underground Railway.—With machines that will bore 100 feet every day recently purchased in Europe by Chief Engineer Yada of the Tokyo Underground Railway Co., a commencement with the proposed tunnel will be made shortly.

New Locos, Japan.—The railway journey between Tokyo and Kobe, by the special express, will be shortened by two hours on the completion of big locomotives, now under construction at the government railway bureau, of which a trial was conducted recently. The result of the trial was successful, as the new locomotives proved capable of running more than 52 miles an hour between Hamamatsu and Kobe, 44 miles between Kyto and Osaka. They will be able to draw a 42-coach train.

Peking-Mukden Improvements.—A correspondent has furnished a few facts showing what is being done to improve conditions on the Peking-Mukden line. It is expected that very shortly eight more goods engines which are on their way from the United States will have been put into service; four other heavy type goods engines are being tendered for, and five are being built in the Peking-Mukden railway works at Tongshan. In addition to these, it is hoped that sanction will shortly be given for the purchase of five more heavy passenger engines, which, it is anticipated, will be in use by next autumn. Permission to buy 200 40-ton steel cars and 200 30-ton covered cars have also been requested, all these being essential to cope with the rapidly increasing traffic. In addition, 60 30-ton covered cars are being constructed at Tongshan, where also five first-class passenger cars, four first-class buffet cars and three first-class sleeping cars are being built. Twenty goods sheds have also been demanded, and sanction for 41 more will be applied for very shortly. If authority is given, goods sheds will thus be provided at all the principal stations along the Peking-Mukden line.

It is satistactory to record that between Shanhaikwan and Chinhsien, a distance of about 114 miles, sanction has been given for relaying the lines with 85-lb. rails, which are expected to arrive early this spring. These will make possible the use of a heavier engine over this section, and therefore the haulage of greater loads. It is stated by the railway authorities that over the whole line the maximum traffic for a single line has not yet been reached, but it is clearly recognized that the double tracking of the line between Tongshan and Chinwangtao has become a necessity, and approval of this work has been requested.

Tokyo Underground Railway Company organized in August last year, will start this spring the construction of its proposed trunk line between Shinagawa and Senju *via* Nihombashi and Uyeno, extending for ten miles.

Trunk Line Extension.—The ministry of communications has a scheme lengthening trunk lines of all the Chinese railways. The scheme is first to lengthen the Peking-Mukden line to Tsitsihar, *via* Kingchow and Tiou-nan, the Peking-Suiyuan line to Kiakhta, extending the Peking-Hankow line southward to Canton and westward to Ili *via* Tsailanyeh, Shensi and Kansu; and later, extension of other lines will be carried out.—*Chinese press report.*

S.N.R. Receipts.—The revenue derived from freight on the Shanghai-Nanking line for January, 1921, is $9,011.40, indicating a decrease of $1,581.15 as compared with the figure for January, 1920; for February, 1921, the amount is $6,481.10, a

decrease of $1,039.70, as compared with the figure for February, 1920; and for March, 1921, the amount is $13,002.29, a decrease of $1,005.11, as compared with the figure for March, 1920. The total amount of this revenue for the three months, January, February and March, of 1921, is $28,504.79, showing a decrease of $3,625.96, as compared with the total amount of $32,130.75 for the corresponding period of 1920.—*Chinese press report.*

Ibaraki Railway Company, Ltd. has obtained permission to construct a line from Kawada-mura to Sawayama-mura in Ibaraki prefecture, a distance of 15 miles. The construction capital is said to be Y.1,500,000. Managing Director, S. Seya.

RIVER AND HARBOR IMPROVEMENTS, WHARVES, DOCKS, ETC.

Governor Tsao Suggests Improvement of Chulung River.—Governor Tsao Jui of Chihli suggests that a certain portion of the contributions from the American Red Cross Society for the famine relief be allotted for the dreding of the Chulung River which is regarded as one of the important waterways of North China.

Changho Harbor.—The Peking government has decided to construct a harbor at the mouth of the Changho river, by floating a loan. It is reported that the terms of the loan which is said to have already been concluded, are as follow: (1) The syndicate of bankers in Chihli province undertakes the construction of the harbor, wharves, jettyworks, lighthouses. (2) Government land will be given to the syndicate; while the land possessed by private persons will be purchased according to the current price. (3) The syndicate will establish the municipality as well as the local police force. (4) The syndicate will establish a bank and be allowed to float bonds. (5) Foreigners wil lbe employed as accountants. (6) The construction work will be extended over fifty years. (7) The contract of the loan will be signed between the Chihli local government and the syndicate.

Grand Canal Repairs.—The gentry of Nanhsin, Chekiang, Mr. Y. C. Pang and several others, have a plan to repair the eastern enbankment of that section of the grand canal flowing by the city at an estimated cost of $600,000. Funds are being secured, and work is expected to commence soon.

Tokyo Improvements.—The following improvements are contemplated by the Tokyo city office:—

Widening the Irifune River, Higashi Horidome River, Satobori Canal, Kajibashi Canal. Build a new canal at Fukagawa-ku from the Oshima River. Reclaim land from Akashicho to Honminato-cho, Kyobashi-ku. Reclaim land from Ishijima-bashi to Ichujiwa, Fukagawa-ku.

Sakai Harbor, Japan.—Y.3,000,000 will be spent for reclamations in Sakai Harbor near Osaka.

Whampoa Harbor.—It is learned that the Chinese authorities have approved the suggestion to divert the $400,000 intended for the conservancy of the Canton River to the deepening of the Whampoa Harbor. The government is being approached and will be requested to communicate with the diplomatic corps regarding the matter.

Haichow Port Works.—A presidential mandate appoints Tuan Shu-yun to the post of director-general to supervise the work of constructing Haichow, Kiangsu, the future terminus of the Lung-Hai railway, into a commercial port.

Tsingho Harbor, Chihli.—A contract has been concluded between the provincial government of Chihli and the Chihli syndicate to build a harbor at Tsingho, Chili. *Chinese press report.*

ROADS

Chefoo-Weihsien Road.—Remarkable progress has been made in the construction of the Chefoo-Weihsien road. The section of the line between Weihsien and Fushan has already been completed, and it is believed that the whole road will be finished by the middle of May.

Kwangtung Road Protests.—The inhabitants of Waichow have sent a protest to the civil governor against the proposed American loan of $5,000,000 for the construction of the public roads in the east river districts. Great indignation has been raised among the inhabitants, as it is reported that a ten years' monopoly has been given to Americans for the construction of these roads.

Public Improvements, Tokyo.—Forty-nine streets within the city limits and thirty-seven stretching out into the suburbs are marked for improvement by the city planning committee of Tokyo. According to the plans as published in the Japanese newspapers, the cost of remodelling Greater Tokio city will be Y.137,000,000 ($68,500,000). The streets to be improved total 73,000 *ken*—about 438,000 feet—in length.

This is the second gigantic plan for the improvement of streets in Tokyo, the first one having been made in 1890, when 127 streets were repaired.

The widest street proposed will be about 163 feet in width—that is the street from the proposed eastern outlet of Tokyo station through the Kamimaki-cho, Nihombashi, to the heart of the city in a straight line. The narrowest will be about 36 feet in width, the classification of the improvements being influenced by the requirements of the localities.

Bridges will be built of steel, stone, steel frame and concrete or other materials of a durable character.

No street car line will be built in a street of less than 12 *ken*—72 feet—in width.

The draft also fixes the width and depth of rivers and canals passing through the city, and the height of bridges over them. It likewise provides for the dredging of canals, repairing of brooks, moats and canals and proposes to reclaim certain parts of moats for street improvement purposes.

New Roads, Taiwan.—The government of Taiwan (Formosa) has under contemplation a plan for an extension and improvement of the system of roads, which, when completed, will do a great deal towards popularizing the use of motor vehicles.

Road Work, Tsinanfu.—A road is being built to the east of Tsinan station of the Tientsin-Pukow railway, at a cost, estimated at $18,800.

Ningpo-Fenghua Automobile Road.—It is reported that an automobile road of about 95 *li* long will be built between Ningpo and Fenghua, Chekiang.

Communication Bureau, Paoshan.—A bureau has been organized, with the sanction of the ministry of communications, to carry out road works in Paoshan, near Shanghai. The bureau has undertaken to build two broad roads, one 30 miles long leading from Shanghai to Taichong, and the other 15 miles long from the city of Paoshan to Kashing.

Indo-China Roads.—It is perhaps not generally recognized that French Indo-China has probably the best roads in all Asia. At present there are about 5,500 miles of excellent roads and an additional 2,000 miles is expected to be constructed within the next four years. Such conditions present an excellent field for motor-cars, trucks and motor-cycles. Whilst cars of French manufacture are admitted free, an import duty at present prevails against other makers. Local opposition to this duty is strong.

SHIPBUILDING

Japan's Super-Dreadnoughts.—The Japanese super-dreadnought *Mutsu*, 33,800 tons which was launched at the Yokosuka naval yard in May last year, will be completed in the latter part of June of this year. It is expected that she will be delivered to the navy by the middle of August at the latest. The super-dreadnoughts *Kaga* and *Tosa*, which are larger than the *Mutsu*, which are being constructed at the Kawasaki yard, Kobe, and the Mitsubishi yard, Nagasaki, respectively, are expected to be launched this summer, the *Kaga* in May and the *Tosa* in September.

New Dollar Steamships.—The Robert Dollar Company has purchased two more of the German ships interned at Santa Rosalia—the *Walkure* and *Orotava*. The former is of 3,046 tons net register and the later 2890. They were purchased from the French government, to whom they have been allotted by the allied reparation commission. The terms of the transfer were not disclosed.

Government Steel Works, Japan.—The government will issue Japanese treasury notes to the amount of Y.23,500,000 in order to supplement the deferred working capital of government iron-works.

New Tank Steamer.—The *Tsurmi*, a special service oil carrying vessel of 8,000 Tons capacity, is being built by the Osaka Iron Works.

New Dock for Kiangnan.—The Kiangnan Shipbuilding Yard, Shanghai, will build a new dock, 500 feet long to the west of the arsenal.

New Ferry Floats.—The Japanese railway department has placed an order for two more railway car ferry floats from the Osaka Iron Worsk for the Shimonoseki-Moji service. The cost is Y. 450,000.

Kawasaki Dockyard Extends.—The Kawasaki Dockyard will increase its capital from Y. 45,000,000 to Y. 90,000,000 to take care of projected extensions which include a chemical department and aeroplane factory.

TELEPHONE

New Exchange, Japan.—At a cost of Y. 500,000 a new three storied telephone exchange will be built at Sanchome, Aoyawa.

TRAMWAYS

Automatic Distance Recorder.—The Tokyo Tramway Company has recently purchased and installed an automatic distance recording machine from America.

Tokyo Tramway Company will build a new line between Dozaka and Otsuka.

Keihin Tramway Company will build a new line between Osaka and Sakurai.

Tobu Tramway Company is building a new line between Hagyu and Oeyodu.

South Osaka Tramway Co. will increase its capital to Y. 5,000,000 in order to double track their line between Iakai and Takata-machi, a distance of 18 miles.

The Ikegami Electric Tramway Company, Ltd. has increased its capital to Y. 1,850,000 in order to extend its line between Omori and Kamatu through Ikegami.

Dairen Tramway Extensions.—The South Manchuria Railway Company's electricity works has decided to extend the tramway from the front of the company's general offices to Jijiko via the army memorial, and also from the present terminus of Fushimidai to Shotoku colony (a new colony raised by the local builders).

About 10,000 lamps are to be newly installed at Shahokou, Shotoku colony, Tanchiatun (behind and west of the S.M.R. Co. general laboratory), and part of Hsiaokangtzu.

New Tramway, Japan—The building of a new tram-line between Dozaka and Naka-machi with Y. 50,000, has been decided upon.

WATERWORKS

Hangchow Waterworks Project.—Prominent citizens of Hangchow in Chekiang province are planning to establish a waterworks in their city. It is understood that $2,000,000 will be required.

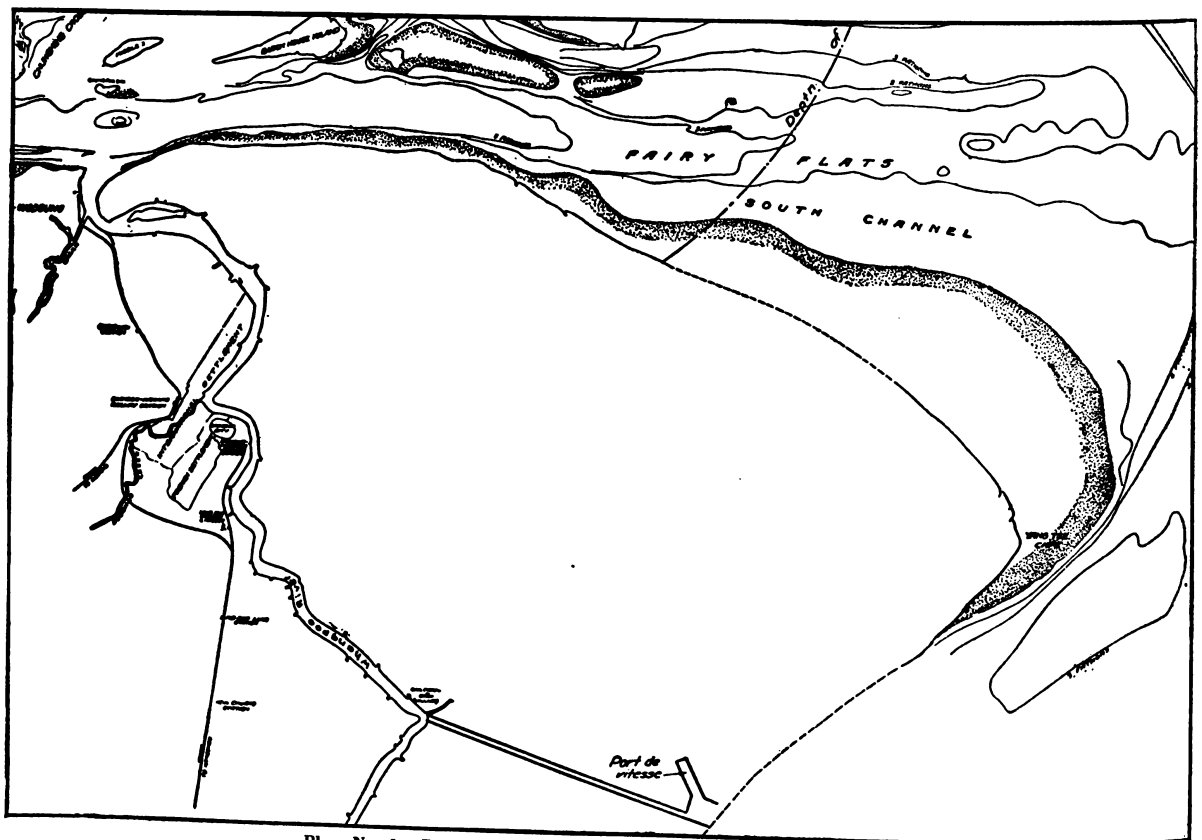
An Express Port for Shanghai

FOR some years the question of adequately providing for the future development of the port of Shanghai has received serious study from the engineers of the Whangpoo conservancy board. Notwithstanding the remarkable progress made since the commencement of operations in training the local river and deepening its channel, it has each year become more and more evident that some larger scheme would have to be drawn up and put into execution, if Shanghai is to preserve its position as the premier port of central China. The future problem of the harbor has therefore been ever before the conservancy board and various schemes have been studied and proposed as a solution.

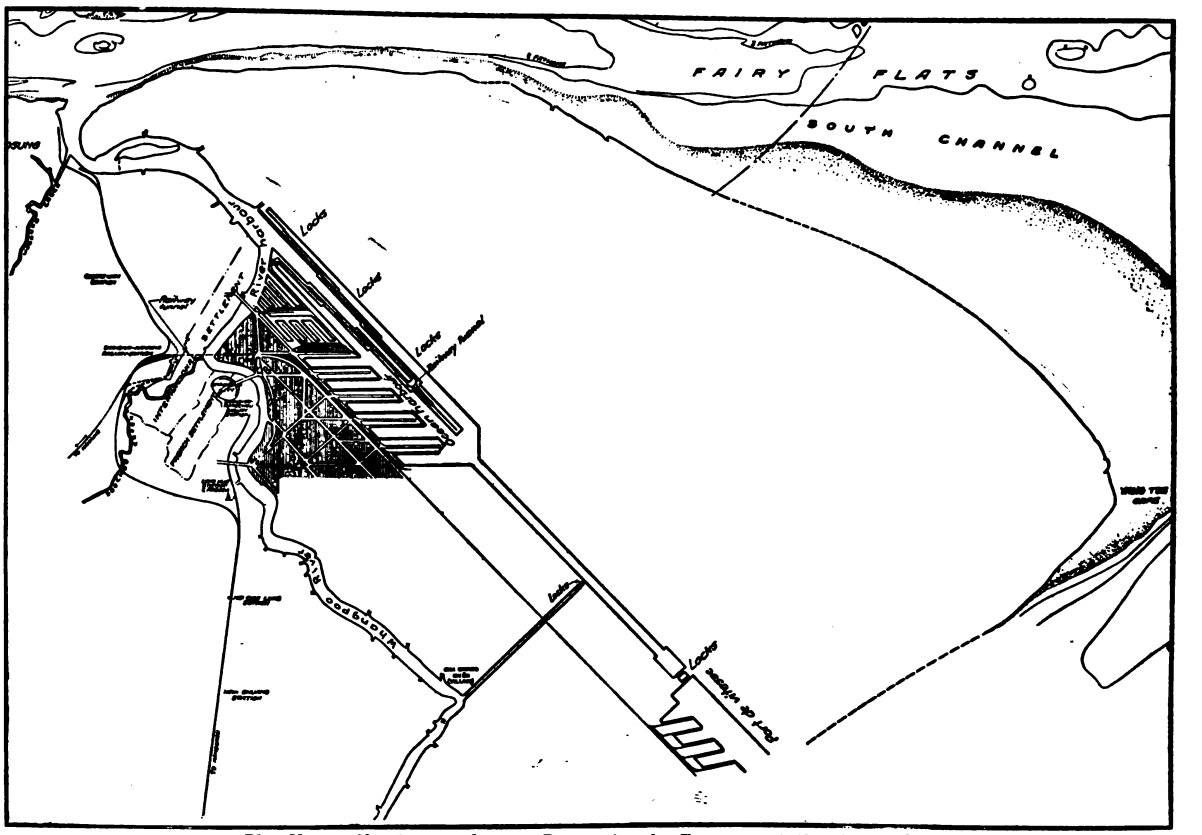
Shanghai harbor is a typical river harbor and apart from the powerful tidal currents, the Whangpoo may be regarded as a ship canal of the first order with a navigable depth of almost 26 feet. Even with the completion of this 26-foot channel from Shanghai to the Yangtze at Woosung, the problem of a deep water approach to the city is far from being solved, as the outermost part of the Yangtze Estuary is blocked by an enormous bar—called the Fairy Flats—where only 16 feet are available at lowest low water, 26 feet at neap high water and 28 to 30 feet at spring high water. The dredging of the 32-mile channel over the Fairy Flats being out of the question, the problem of conserving for Shanghai its dominant place as the centre of Chinese trade and shipping is one that concerns every firm and property owner in the Settlement.

The question of the further development of the harbor, whether and how the Fairy Flat bar can be deepened, and whether the development of the harbor lies in the future development of the present river harbor at Woosung, or a new deep water harbor at Woosung or on the south side of the Pootung Peninsula on Hangchow Bay (40 miles south of Shanghai) was raised in a special report made to the conservancy board in 1918 by three engineers—Prof. Dr. J. G. Richert, Mr. P. G. Hornell and Mr. H. von Heidenstam. It has been shown that a few miles west of Yangtze Cape at a distance of a couple of miles from the coast line, the depth at low water was 35 feet, which indicated that a port on Hangchow Bay could be constructed at much less cost than dredging a deep water channel 32 miles through the shifting Fairy Flats. The channel to be dredged for a Hangchow Bay port would be eleven times shorter and free from the danger of rapidly silting up. Such a port would involve a great saving of distance for the big ocean steamships by avoiding the troublesome Yangtze estuary. Within the last ten years there has been an increase of 100 per cent. in the size of steamers visiting Shanghai and the tendency is to increase the size. The difficulty of these vessels reaching the anchorage off Woosung is such that unless some measure is adopted to facilitate their entrance, Shanghai trade will have to be limited to the smaller size steamships.

In carrying out their investigations, the committee of engineers above mentioned submitted to the conservancy board four scheme, indicating how the problem might be met and solved. The firsts shown on Plan 1, implies the construction of an inlet that will



Plan No. 1.—Preliminary Plan for the Extension of Shanghai Harbor



Plan No. 2.—Showing an alternate Project for the Extension of Shanghai Harbor

reduce the distance between the sea and the Whangpoo to a minimum. It was furthermore presumed that the harbor should be located as near the coast as possible, in free communication with the sea as well as the Whangpoo. In the second plan, the inlet from the sea is constructed near the Yangtze Cape where it would not be silted up from the estuary. The canal is here drawn in such a direction with regard to the Whangpoo that the communication will be as easy as possible at the junction with the mouth of the Whangpoo. The harbor here shown is designed as a combined open harbor and dock harbor, in which the ships may call without being held up by any tedious passing through locks. In this case such transhipping arrangements might be conceived that between the open river harbor and the dock harbor—the latter being constructed for the largest vessels plying the Pacific—narrow tongues of land are left across which the goods may be transhipped between sea-going vessels and river boats. The project is merely an attempt to picture one of the innumerable solutions that had to be considered.

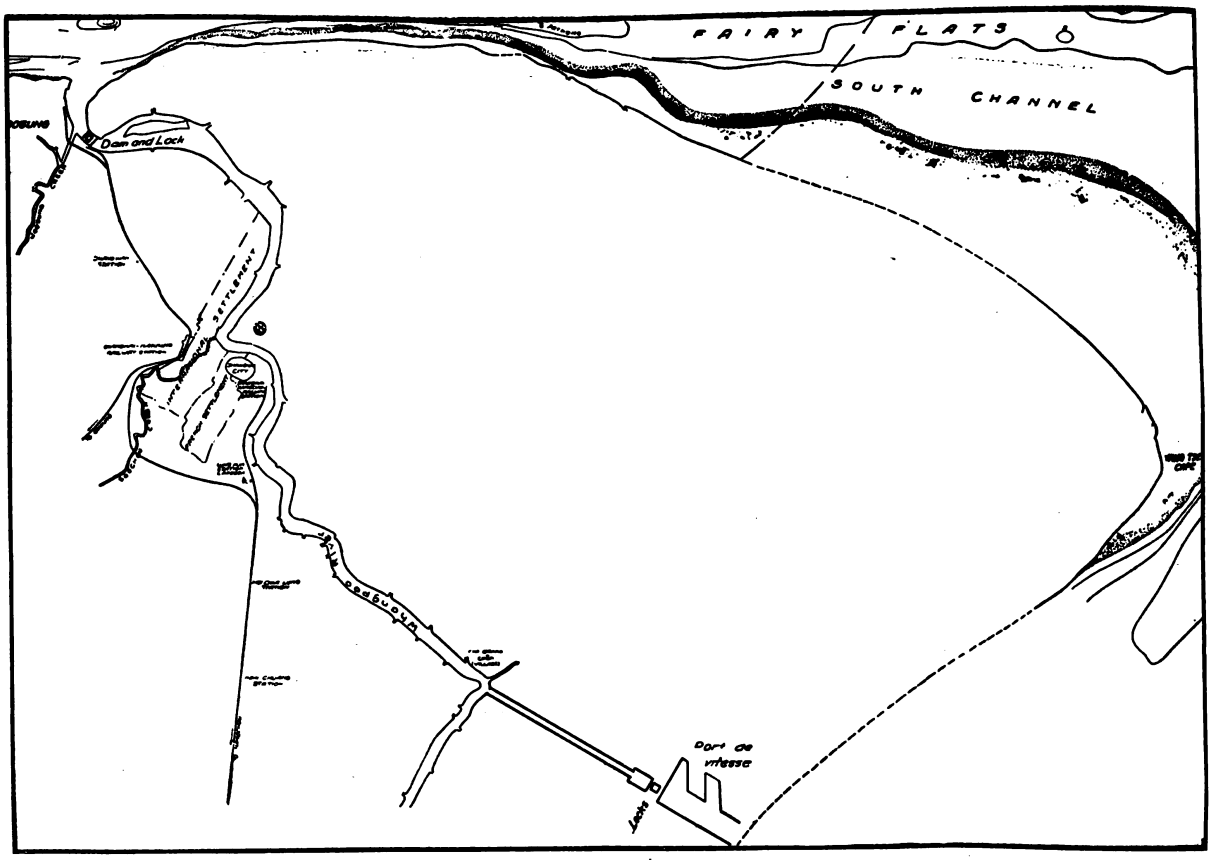
The main object of the harbor is and must be to meet, in the best possible way, the demand of traffic for the Yangtze district as a whole—not only for Shanghai and the Whangpoo district. The due fulfilment of this object not only requires that the entrance to the Yangtze shall be sufficient for the biggest vessels that can ply between the estuary and Hankow, but also that the through traffic is troubled in the least possible degree by the local traffic in the Shanghai harbor and in other parts of the lower Whangpoo.

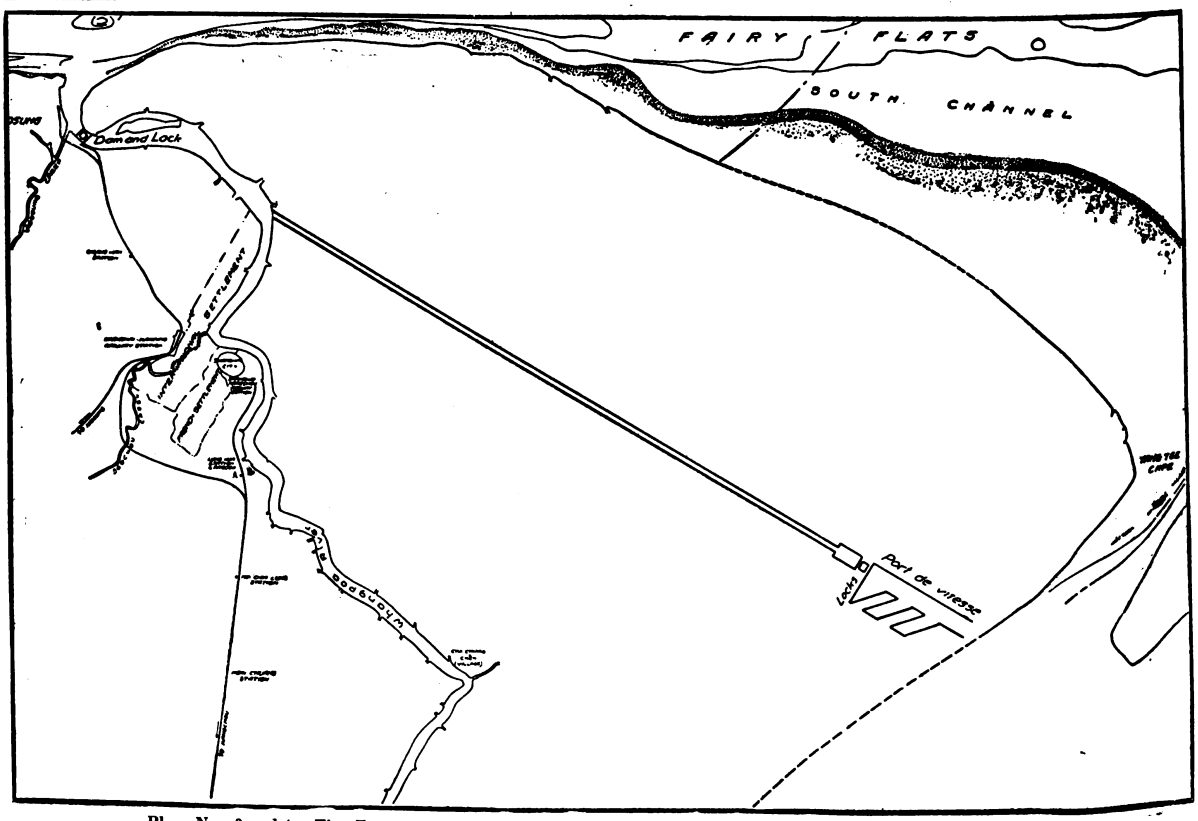
In one of the memoranda presented to the board, the suggestion was made that the lower part of the Whangpoo should be transformed into a dock harbor raising the lowest water level by about 10 feet, but the possibility of utilizing this scheme was limited as long as big vessels would have no object to lengthening their voyages beyond Woosung.

In Plan 3 many of the difficulties encountered in the other projects were eliminated. This provides for damming up the entrance to the Whangpoo at Woosung, and connecting it with the proposed express port by a short canal at Shachiang where the river makes a right angle turn. The depth of the water in the river would be increased by about 10 feet by this scheme and would thus in most places be sufficient to meet the demands of the immediate future. The damming up would equally affect the cost of the maintenance of the channel, as by shutting out the tide water, the most serious dangers from silting would be removed. A comparative estimate of costs owing to the comparatively short stretch of canal favors the adoption of Plan 3. The engineers conclude that of all the schemes discussed, Plan 3 offers to Shanghai the greatest advantages.

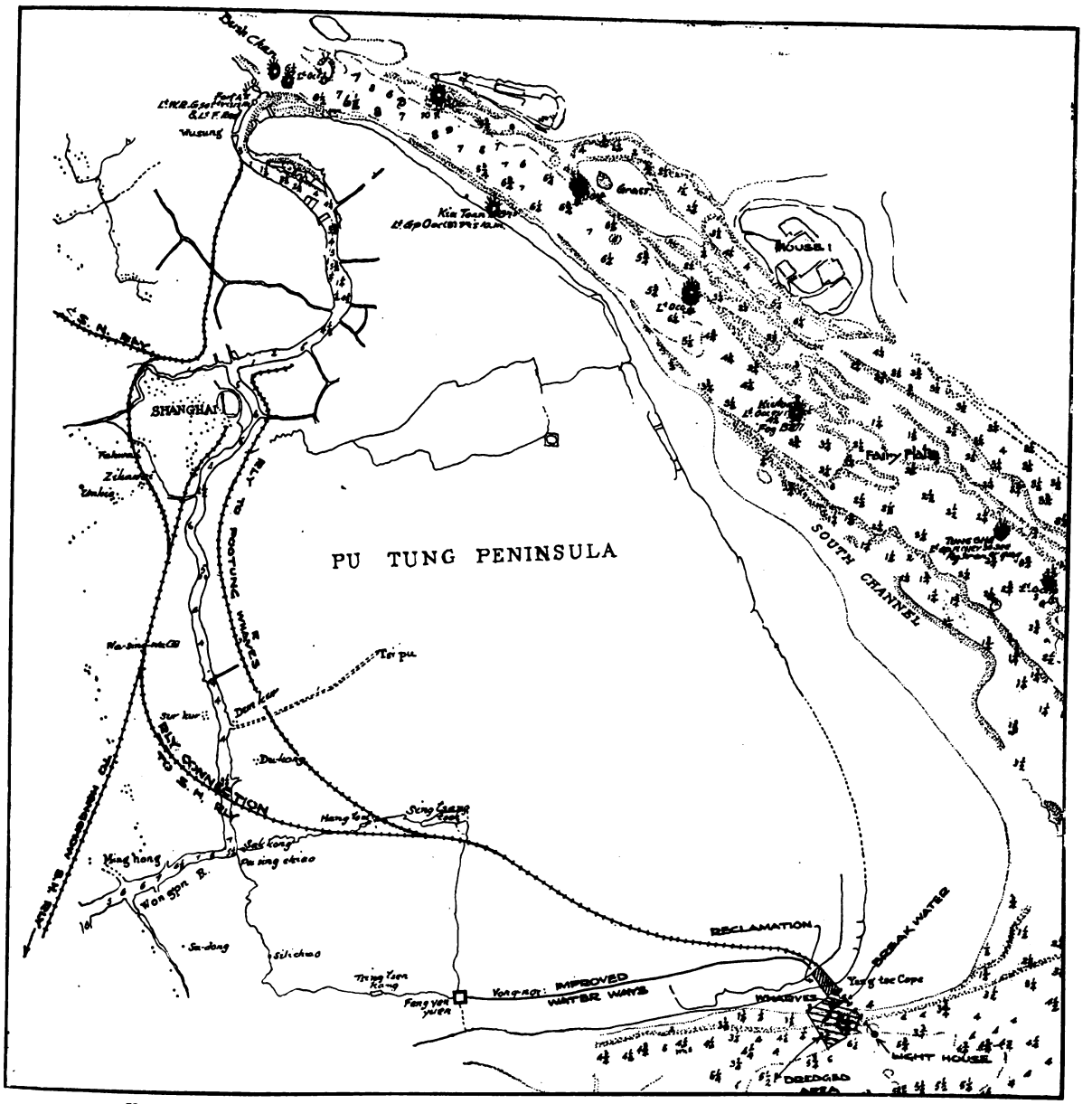
Other projects having the same object in view have also been published, notably one drawn up by Mr. Sidney J. Powell, A.M.I.C.E., who proposed a harbor just inside the Yangtze Cape connected with Shanghai by railway, to be constructed as a private enterprise at a cost of Taels 17,300,000. Mr. Powell proposed the organization of a syndicate to be called the Shanghai Deep Water Port and Harbor Company, which would undertake the construction and turn it over when completed to a port trust constituted as part of the Shanghai Municipal Council with Chinese participation. Mr. Powell estimated that by an impost of one-half per cent. on the value of imports and exports passing through the port the undertaking could be paid for in six years. Calculating the gross volume of trade at Taels 600,000,000, this would provide Taels 3,000,000 per annum.

Mr. Powell's prospectus brought out very clearly the economic





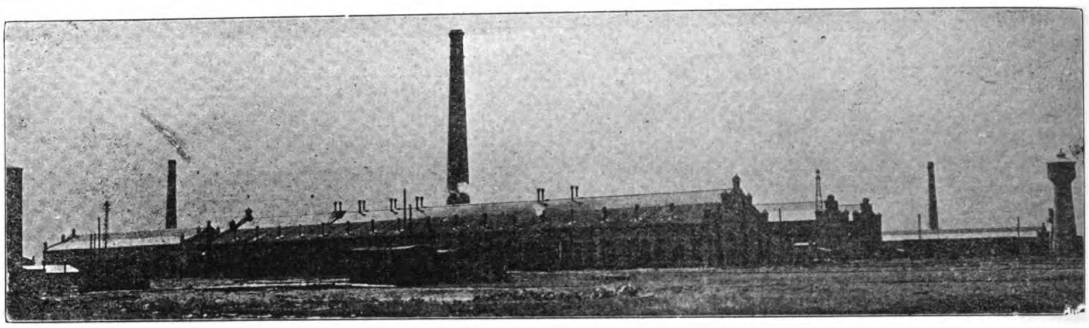
Plans Nos. 3 and 4.—The Engineers conclude that Plan No. 3 offers the greatest advantages to Shanghai



Yangtze Cape Harbor and Shanghai Deep Water Port. Map Showing Position with Railway and Water Connections, Scheme proposed by Mr. Sidney J. Powell, A.M.I.C.E.

and other reasons calling for the construction of such a port, which, summed up, are that a harbor near the Yangtze Cape puts Shanghai 28 miles nearer to cheap transportation and saves the Settlement from imminent congestion and ultimate ruin. Besides, steamers drawing 32 feet of water can never be economically berthed in the Whangpoo. He concludes with the truism that "those ports are most isolated from the markets of the world which fail to come up to the modern requirements of trade and shipping."

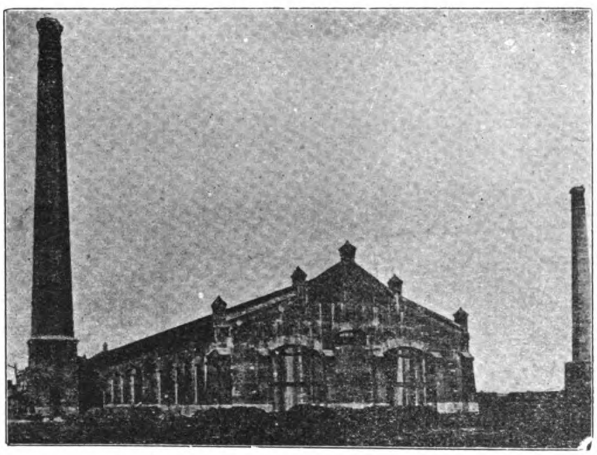
Meanwhile the conservancy board has been hard at work on the problem and conducted extensive surveys of Hangchow Bay in order to provide the necessary data upon which to base eventual plans for an "Express Port." The result of these careful and painstaking investigations have been made public in a special "Report on the Hydrology of the Hangchow Bay and Chien Tang Estuary," which covers a period from April 1919 to January 1921. The only harbor sites worthy of consideration in relation to Shanghai are located along the northern coast of the bay from Chapu to the Yangtze and important data is now in the possession of the board upon which a more definite selection of a port can be based. One of the most important parts of this report is the valuable collection of data concerning the celebrated Hangchow Bore. The result of the investigations has determined the depths in the bay, navigable channels and approaches thereto, the exact geographic position of the north coast of the bay and the depths off this shore. In addition, it has been determined what changes are in progress in the bay or likely to develop and the extent that tidal currents and weather affect navigation. A survey of the outlying islands of the Chusan Archipelago, has also been made.



Chinese Eastern Railway Car Shops at Harbin

Russian Foundry Practice in the Harbin Shops of the Chinese Eastern Railway

LIEUTENANT Charles E. Lee of the American Expeditionary Force know as the Russian railway service corps was sent to Harbin in November 1917 to exercise, amongst other duties, general supervision over the railway repair and maintenance shops of the Chinese Eastern Railway. Before entering the service Mr. Lee was superintendent of the South Bend Foundry Co. and is now with the Buick Motor Company at Flint, Mich. Lieutenant Lee was a good observer, and has contributed his impression to *The Foundry*, which he describes the foundry practice as he found it at the shops of the Chinese Eastern Railway. He says:



Machine Shops of Chinese Eastern Railway

Most of the railway stock on the Trans-Siberian railroad is imported, but extensive repair shops are maintained at all the divisional points including that at Harbin, which as has already been stated is the junction where the line running to Port Arthur and Dalny joins the main line. Whatever railroad systems and methods the Russian commission studied while in the United States it is quite evident that they did not see any railroad repair shops. The methods and equipment in vogue in the railroad shop in Harbin are archaic, while the workmen move at a pace that is unbelievably slow.

The foundry building is solid brick, the walls being 30 inches thick at the bottom and ornamented on the outside by an elaborate system of pilasters and copings. The only windows in the building are in the ends and as a result the interior of the building is quite dark. A little additional light is furnished through a few poorly constructed skylights in the roof. The main bay of the shop is equipped with two 10-ton electric traveling cranes and several side wall jib cranes. The latter are never used.

Any casting over a few hundred pounds in weight in this foundry is made in a flask and dried in the oven. All the remainder of the work, no matter how small, is bedded in the floor. The only exceptions to this rule are the oil boxes or journal boxes. These are made in flasks on a machine. The oil boxes in use on the Russian railroads differ materially from those on American roads. They are cast in halves, the joints planted in the machine shop and the two halves afterward bolted together. The only function of the molding machine in making the boxes is to roll the drags over. The inside of the box is made with a dry sand core and the cope is perfectly flat.

No system is observed in making cores as each man makes his own cores in close proximity to his job. Small stock cores are made by boys in any convenient place. The cores are made from a natural loam which does not require any binder. A certain amount of manure is mixed with the loam to give it porosity. The cylindrical cores all are swept on barrels wound with hay rope. All the cores are dried in the same ovens as the molds. The ovens are poorly designed and constructed and as a result are slow dryers.

Two cupolas are provided for melting the metal, one of three tons, and one of five tons capacity. The metal does not accumulate in the furnace but runs into a receiver as fast as melted. This receiver or forehearth is attached to the front of the cupola, the bottom resting on the poor. It is provided with a slag hole near the top on one side which serves to warn the melter when it is time to tap the metal. The hole also serves to remove most of the slag. The receiver is enclosed but there is a section in front which is detachable and can be removed to fix the bottom every day. After the bottom is made ready and a quantity of wood placed to dry the inside of the vessel, the doorway is daubed with clay and the door clamped tightly in place. The fire which dries the inside of the chamber also dries the mud at the door joint sufficiently hard to prevent the metal from leaking through. A vent pipe, for which there is no obvious reason, is connected to the top of the receiver and is attached higher up to the shell of the furnace. An excellent grade of iron and coke are available, both being imported from European Russia. The iron is high in silicon and phosphorus and it is possible to pour large castings although the metal is melted neither hot nor fast.

A general idea of the operation of the shop may be gained from a study of the following items taken from a typical monthly report of men employed :

Iron Foundry		
Molders	103	
Helpers	29	
Apprentices	23	
Chippers	36	
Cupola men	18	
Brass furnace men	18	
Carpenters	6	
Painters	1	
General labor	43	
	—	277
Babbitt Shop		
Mechanics	7	
Helpers	2	
Labor	5	
	—	14
Pattern Shop		
Patternmakers	25	
Helpers	1	
Apprentices	3	
Labor	5	
	—	34
Total foundry force		325

In addition to the force of 325 men there was one general foreman ; one foreman in the iron foundry ; one in the brass foundry and one in the pattern shop. The office force included three men and one girl. Most of the workmen were Chinese with a few Russians. Compare the number of men with the output for the month in Russian poods. The pood is 40 Russian pounds or 36 pounds avoirdupois. The total output for the month of April, 1918, is shown in the following table :—

Total Output for the Month of April
Twenty-three Working Days

Iron Castings	
Ponds	Tons
8,085	145
Brass Castings	
Poods	Tons
369	6.64
Babbitt Liners	
Poods	Tons
1,333	23.99

Analyzing this table we find that the total output of iron, brass and babitt amounted to 175.63 tons for the month. There were 23 working days in the month and this gives an average of 7.64 tons a day or approximately 10 per cent. of what a similar American shop would turn out in the same time.

There is another railroad shop at Nicolsk-Ussurysk, but it is much smaller than the one at Harbin only employing 45 men altogether, all Russians. In Angust, 1919, this shop turned out 52,740 pounds of iron castings and 4,585 pounds of brass, an average of 2,397 pounds of iron and 208 pounds of brass a day.

Iron is cheap and the amount of return scrap is so large that no attempt is made to economize. The dump is full of iron which has been wheeled out with the refuse.

Philippine Bureau of Supply

The classified civil-service personnel of the bureau on December 31, 1919, numbered 121, all of whom were Filipinos, the only one American employee remaining in the service during the year having been granted retirement effective the date mentioned.

The year was a record year in the volume of work handled by the bureau. The purchases amounted to P18,873,789.27, or an increase of P6,210,286.59 over those of the previous year, while the sales totaled P18,159,825.82, or an excess of P5,317,110.87 over those of 1918. The gross earnings, exclusive of the division of cold storage, amounted to P1,086,995.63, which exceeds those of the previous year by P186,292.45; and the cost of operation was P462,176.30, which is P85,983.97 over that of 1918, thus giving a net gain of P624,819.33, or an increase of P100,308.48 over the profits of the previous year. This does not include the purchase and sale of rice.

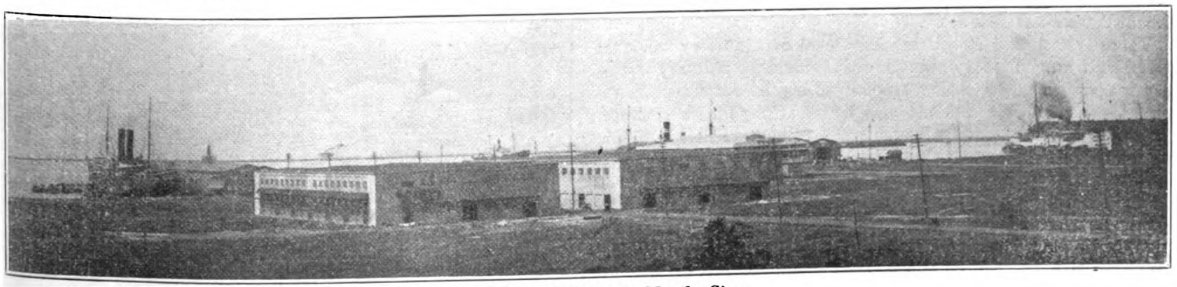
From the operation of the ice plant the bureau obtained a gross earning of P723,117.31, or an increase of P147,195.47 over that of the previous year ; the expenses amounted to P486,946.11 or an excess of P58,342.74 over those of 1918, thus leaving a gain of P236,171.20 as compared with P147,318.47 for 1918. If from this amount the cost of furniture and equipment aggregating P5,621.17 bought during the year is deducted, a net gain of P230,550.03 would still remain.

The number of requisitions received was 16,464 or 1,470 more than those of the previous year, giving an average of 1,372 per month. Of these requisitions 9,903 came from bureaus and offices of the insular government and 7,461 from provinces and municipalities.

The deliveries made totalled 648,617 packages, 1,155,096 board feet of lumber, and 49,575 tons of cargo shipped by water ; 278,982 packages, 2,432,060 board feet of lumber and 14,809 tons of cargo sent by rail ; and 5,008,891 packages, 3,176,436 board feet of lumber and 61,477 tons of cargo sent within the limits of the city of Manila.

The year was also a recor*fi* year for the lumber yard and sawmill. The receipts and issues of the lumber yard amounted to 6,833,830 board feet and 4,342,445 board feet, respectively, as against only 3,985,336 received and 4,220,270 issued during the previous year. The sawmill turned out 3,901,322 board feet of lumber of different finishes, producing a revenue of P49,111.64.

In the rice crisis which occurred during the year, this bureau played an important part which did much to relieve the people of its disastrous effects. This consisted in providing this cereal to those regions where shortage existed and in making an equitable distribution of the same. The number of sacks of rice purchased to fill the numerous requisitions received during the period from July 1 to December 31, 1919, was 631,395 sacks valued at P10,536,293.88 The sales amounted to P10,983,417.47.



Bureau of Supply Bodegas, Manila City

ar Eastern Review

Review of Far Eastern Trade, Finance and
ig, Dedicated to the Industrial Development
icement of Trade in Far Eastern Countries

G FINANCE COMMERCE

KEE ROAD, SHANGHAI, CHINA

egraphic Address: Farview, Shanghai

HANGHAI, JUNE, 1921.

red to Mr. Thomas W. Lamont at the Tokyo n May 11, 1920, he stated in his address that ture from America for the Far East he and had received assurances from the Japanese leading members of the cabinet that Japan eservation regarding Manchuria and Mongolia. is speech published in American newspapers, ientioned as being the direct cause of his visit conclude upon the ground the long drawn out r Special Consortium Supplement, we gave tirely to Mr. Junnosuke Inouye, the governor and recognized leader of the Japanese banking ; he personally had telegraphed to Mr. Lamont nter the consortium. As a matter of fact, ame in contact with Mr. Lamont before his ier personally or in correspondence, so the y Mr. Lamont that Japan would enter the ough other channels.

* * *

HY HARASS JAPAN?

group may prevent a loan by other by one group willing to make it by them-

agreement contemplates that no one of its combination of its groups less than all, will make s to China or to a Chinese province on bonds countries, without first giving all the other opportunity to participate in the loan in the vided for in the consortium agreement. This to any plan which provides for international in loans to China in the place of international

On the other hand, if any one or more of t desire to participate in a proposed loan, and e willing to make it, there is nothing in the t to hinder. In other words, no consortium loan by other groups or even by one group themselves or alone."

of the consortium agreement was given by tevens, the representative of the American ore the American chamber of commerce at .

essary to recall that Japan was willing n-Jchol project in the consortium, but l consideration based on strategical reasons, peedily financed, and, if the other groups participate, she be permitted to undertake ded. The consortium tempest simmered question. Now Mr. Thomas W. Lamont, the head of the consortium, told us in an official history of the negotiations published over his signature in the American papers of August 8, 1920, that the opposition to Japan's request for reserving Manchuria and Mongolia from the scope of the consortium was not because the western groups had any particular plans for developing the provinces in question, nor were they specially desirous of making investments there, but because they could not assent to being excluded from those regions.

The question arises, if Japan desires to proceed with the construction of the Taonan-Jehol line on the grounds that it is essential to her economic and strategic safety, will she be permitted to tackle the job single-handed, or will the other members of the consortium take up their participation, and accept the implied responsibility of preserving the neutrality of the Inner Mongolian strip menaced by an invasion from the direction of Urga? If Japan is willing to undertake the work single-handed and there is nothing in the consortium agreement to hinder (if the others decline to participate), then it simply remains for her to notify the other groups that she is prepared to proceed with the construction of the Taonan-Jehol line and invite them to participate. If they decline, there is nothing in the consortium agreement that will hinder her from going it alone.

Japan has been inviting Americans to co-operate with her in the development of Manchuria, and as evidence of good faith has purchased $75,000,000 of American materials for her enterprises in that region, and is now at this moment spending $20,000,000 in America and planning to spend $200,000,000 in the next four years. The South Manchuria Railway is to be double tracked from Mukden to Changchun, the lines from Kirin to the sea, from Chenchiatun to Taonan, and from Taonan to Changchun completed, and many industries expanded and created. Japan says in effect to America, "come and co-operate with me in developing these territories. If you believe that I am bent on aggression in China, the partnership so formed is the best assurance to China and the world, that our activities will be along purely legitimate lines." If Americans refuse to take Japan at her word, and she is at liberty to tackle the job single handed, it seems childish and futile to continue to place obstacles in her path.

* * *

China's Own Railway Program

IN another article we invited attention to the stimulus given to the establishment of new Chinese banking institutions through the disinclination of the consortium to advance funds to the Peking government. From its conception, the consortium has declined to consider the railway problems of China from China's own viewpoint, and as a result, China has set herself firmly against any scheme of internationalization and seems determined to oppose the settlement of any outstanding question which fails to unqualifiedly recognize her full sovereign rights.

There are undoubtedly many ways whereby China can escape doing business with the consortium in the construction of new railways, and circumvent the monopoly of foreign government support to national banking groups. It is not necessary for China to continue to adhere to her old program of nationalizing all railways under the direct control or supervision of the ministry of communications. She can throw the field open and permit Chinese companies or the provinces and municipalities to raise capital for these enterprises, an operation facilitated by the creation of many new banks, whose guarantee, in some cases, is sufficient security for foreigners to lend money upon. As the consortium is not a monopoly and the field being open for the financing of these so-called industrial enterprises, there are many ways whereby the guarantee of the government can be extended to them, without coming in conflict with the aims of the consortium.

Signs are not wanting that the ministry of communications and its advisers have been burning the midnight oil devising plans for the building of railways without calling upon the consortium,

and has drawn up a construction program which foreigners will do well to study. The salient features provide, that:

A. Construction of branches or feeders to existing trunk lines will be open to private enterprise on the following conditions: (1) work must be completed within the contract or specified time; (2) branch lines exceeding a certain mileage can remain under the management of private constructors subject to the regulations governing the operations of private railways; (3) short branches or feeders so constructed will be leased and operated on behalf of private companies by the management of the trunk line which it feeds; (4) favorable operating contracts covering freight and passenger tariffs, etc., will be entered into between the government and private companies.

B. These private enterprises will be encouraged by: (1) subsidies; (2) reduction of exemption from freight charges for transporting supplies on government lines for a period of years; (3) rewards to large investors; (4) guarantee of interest.

C. The public will be invited to subscribe to shares in the existing trunk lines to the extent of 20 per cent. of their capitalization, and interest on the investment will be guaranteed at the same rate as the Peking-Hankow Redemption Loan Bonds (five per cent). If the above measures cannot be carried out some other plan will be adopted.

D. Building railways by construction companies will be encouraged under the following conditions: Railways will be built under a lump sum contract for a complete section or on an item cost basis. The contractors will not be allowed to interfere in the management of the railways so built, and must hand over to the government each section as completed within the time limit specified in the contract; the cost of the work to be gaid for in annual installments commencing with the sixth year after the date of completion.

E. Bonds for construction will be issued either by existing lines or projected lines and sold through Chinese or foreign banks on substantial securities guaranteed by the surplus revenues of existing railways.

In other words, the minister of communications will attempt to put into practice for the benefit of China certain ideas advanced by foreign bankers as an irreducible minimum for future loan terms. When the above program is studied in connection with the article on the Chinese Banking Group, the facts disclosed must give pause for serious thought. It becomes clearer every day that Peking intends to do everything possible to encourage native investors to come to the rescue of the country. That the Chinese government is now willing to admit domestic investors into a twenty per cent. participation in the capital and earnings of existing lines, in order to obtain the funds to carry out its program, indicates that a strong inducement will be held out to the moneyed interests of the country to come forward and finance its industrial development. If millionaire tuchuns and other officials into whose coffers have poured the wealth of the nation for the past eight years, can be induced to invest it in building profitable railways, instead of buying property in treaty ports and shares in foreign companies and enterprises, China may be able to develop her transportation system without foreign assistance. There is reason to believe that this invitation to invest in patriotic enterprises comes as a direct answer to the campaign waged for over a year to coax native capital into sino-foreign enterprises free from foreign taxation, and, by reason of their nationality, exempt also from Chinese taxes.

The last report of the ministry of communications shows that the valuation of the combined railway properties under its direct control, is $511,000,000, in which the government equity is $174,000,000, and the non-government or foreign equity, $336,000,000 (silver). It has been very emphatically impressed upon the Chinese that in order to obtain a large foreign loan for railway construction at a reasonable rate of interest, it may be necessary to give some additional inducement to the bond purchaser in the way of participation in the profits of the lines, or an inducement equivalent to that conceded to the Siems, Carey Company, or, twenty per cent. With the ruling rates of interest prevailing in America and Europe, it is no wonder that in their present desperate financial situation, the Chinese authorities are willing to concede their own people a twenty per cent. participation in the capital and profits of their railways in order to raise the funds to proceed with construction. Such participation, if based upon the full valuation of the railways in operation, say $500,000,000, would amount to $125,000,000. As long as these bonds are sold in the country, there seems to be no good reason why the foreign banks who furnished the original capital should object, especially as many of these railway loans are secured, not on the physical property and earnings of the lines, but by specific provincial and other revenues. With flotation profits to native banks, and a low price, such an issue or series of issues, should net the railway department the comfortable sum of $100,000,000 with which to carry out its program. The native investor is guaranteed a five per cent. interest on his money, with the possibility of earning as high as 15 per cent. The surplus of all the government railways for the last official year was $36,000,000, so it would seem that the investor would be amply secured as to his five per cent. guarantee, even if tuchuns and war-lords do occasionally bang their fist on the table of the railway minister and command him to "fork over" the cash in the till.*

It is perhaps too early to hazard an opinion on the future of the plan. On its face, it was designed to foil the consortium, and in the matter of using the surplus profits of the existing lines as a fund to guarantee future construction loan issues by Chinese companies, financed by Chinese banks, it deprives the consortium of a valuable asset declared by at least one of the official groups to be indispensable to the carrying out of any comprehensive railway plan involving foreign loans. With twenty per cent. participation in the profits of these lines, a fair rate of interest, a low enough issue price, coupled with the profits from construction and the supply of materials, there is every inducement for the new Chinese banks in their heyday of prosperity, to demonstrate their patriotism and business usefulness. The large profits held out to any Chinese construction company that will finance and build a short branch or feeder, should prove attractive to the merchants of cities and towns adjacent to the main lines, and divert the expected flow of Chinese capital into tax-emptied foreign enterprises to purely national undertakings. Here the tables are turned, and Chinese companies operating under a guarantee of their own government, offering great profits with the extra inducement of furnishing the materials may attract foreign capital to subscribe to sufficient shares in these concerns to ensure their success.

The inducement held out to foreign firms to purchase shares in these Chinese construction companies in return for an assurance that the materials will be purchased through their agency, may prove too seductive to ignore in these days of strenuous international competition. If the plan works, and the Chinese banks get behind their construction companies, the foreign firm may either have to participate or face the possibility of seeing orders for materials placed over his head in Europe and America by Chinese purchasing agents, as has already occurred in several choice contracts.

Conditions are changing in China. The Chinese banks have outgrown their old pawn-broking days and many are now in a most prosperous condition. There is immense wealth in the country. If the tuchuns and officials can be induced to combine their hoardings with the merchants, to finance these immensely profitable undertakings, there will come a revolution in the ways of doing business in this country.

There may be other ways than through the consortium for foreign manufacturers to sell railway materials to the Chinese. At any rate, if the astute Mr. Yeh's plan succeeds, and his successor obtains the full confidence of the native banks and the moneyed tuchuns, there will have to be something beside pure altruism as a talking point in obtaining the much advertised railway supply business in China. The plan holds possibilities that should make the foreign banker, machinery manufacturer and agent do some tall thinking.

*See Editorial on China's Railway Finances.

China's Railway Finances

THE statistics of the Chinese government railways for the year ending December 31, 1919, showed a surplus of $36,478,281 after all net income debits had been paid. The Chinese government bureau of economic information, which seems to be the official mouthpiece for the dissemination of this and other interesting information, reports that for the year 1920, the "Free Surplus" (obtained, according to the bureau, after deducting the amounts appropriated for additions and improvements, retirement of funded debt, bondholder's share of profits, etc., from the net surplus of the various lines) was $19,324,765. After the above explanation it goes on to show how this "Free Surplus" is expended, and gives the following itemization :—

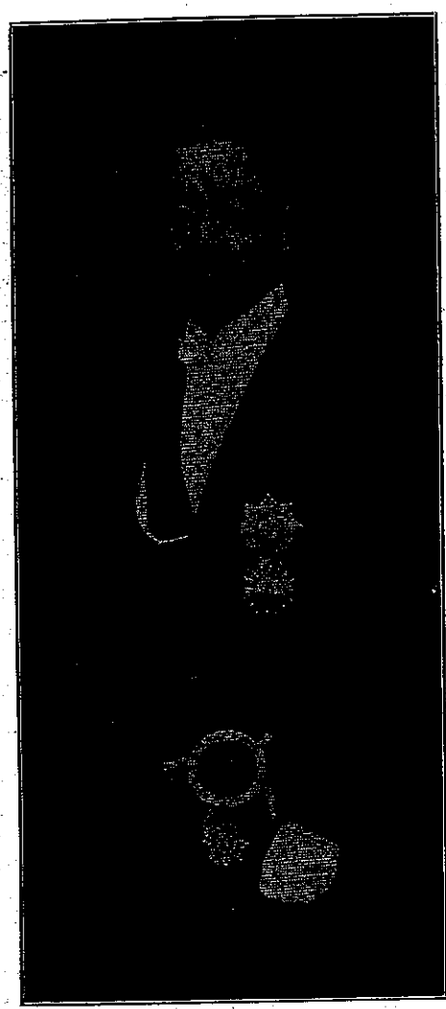
Item	*Disbursement*	*Free (or available) Surplus*
Free Surplus		19,324,765
Remittances to Government :—		
Payments of Principal and Interest of Railway Loans	3,000,000	
Payments of Railway Engineering Works	2,300,000	
Payments of Principal of Domestic and Foreign Loans	12,600,000	
Payments of Interest of Domestic and Foreign Loans	2,700,000	
To cover Losses of Peking notes collected at the four stations in Fengtien	420,000	
Expenses of Tongshan Railway College	90,000	
Transfer of Rentals of Postal Cars	200,000	
Transfer of Through Traffic Accounts	270,000	
	21,580,000	
Transfer of Accounts of Military Transportation	2,450,000	
	24,030,000	19,324,765
Free Surplus	19,324,765	
Total Deficit	4,705,235	

We confess to be somewhat puzzled to understand the explanation of a "Free Surplus" which goes on to show that it is no surplus at all. On the same date, however, the report of Minister Yeh Kung-cho covering the conditions of the ministry was made public, and from this we glean the following enlightening information. It would appear from this report that the Chiaotungpu has been carrying the entire load of financing the Peking government, in addition to other very interesting enterprises which run into high figures. The school budget, the expedition for the relief of Urga, the parliamentary elections and sundry other mooted measures calling for heavy expenditures all seemed to hinge on the ability of the railway board to provide the funds.

It seems that the Bank of Communications raised the modest sum of $20,000,000 since last September as its contribution to keeping the government alive, in addition to paying off various obligations that fell due. The ministry also took upon its shoulders the task of providing $220,000 per month for the ministry of education, $500,000 a month to the endowment fund for retiring domestic loan bonds, and paid the expenses of the bureau of economic information, which calls for the modest sum of $480,000 a year, as good as a ministry nowadays. In addition, the Chiaotungpu has handed over to the ministry of finance in the past eight months over $3,000,000 in cash and domestic bonds, and taken upon its shoulders the construction of the Hukwang railway, which calls for a continuous expenditure of $160,000 monthly in order to avoid further suspension of work.

A British loan of $7,000,000 was raised to double track the Peking-Mukden line from Chinwangtao to Shanhaikwan, and construction of the Chinchow-Chowyang branch of the same railway will call for $5,000,000, spread over several years. A university of communications will cost more than $360,000. From March to December of this year the ministry will be called upon to pay out $9,450,000 on interest and amortization of old railway loans, $11,080,000 on domestic debts and other amounts which bring the total up to $35,390,000, while the amount of funds that it expects to receive during the balance of the year is only $14,600,000 of which $10,000,000 is represented by the surplus earnings of the railways and the balance apparently from the posts and telegraphs.

Minister Yeh was of the opinion that he had done as much as was humanly possible to aid the government in its hour of financial stringency, and if his railway program could be carried out, which contemplates letting in the public to a twenty per cent. interest in the existing lines, he would probably have brought another goodly sum into the war chest.



Mr. Chang Chi-tan
New Minister of Communications

* * *

The Federal Wireless Contract

WE have repeatedly deplored the fact that scheming Chinese officials have foisted off on American financiers, contracts and concessions, which, politically speaking, were loaded with dynamite. Starting with the Manchurian Bank and Chinchow-Aigun contracts down the line through the Currency Reform Loan, the Siems-Carey Canal and Railway contracts, the Continental and Commercial Bank loan to the recent Federal wireless deal, it is the same old story, an apparent determination to compel America to give effect to its conception of the Open Door by pitting us against the other Powers, especially Japan. It was all well enough as a game of wits and diplomacy, this we enjoyed, but when we became convinced, as we did, that such practices were quietly driving us into a position where a "show-down" seemed inevitable, and at a time when the nation was woefully unprepared to enforce its policies, we refused to further support the Chinese in these dangerous tactics.

For as nasty a mess as has ever been brewed in China let us probe into the unsavory story of the wireless deal, and to escape the accusation of bias, we will take the salient features from the *Peking & Tientsin Times*, which cannot be accused of harboring any friendly sentiments towards Japan.

"The summary of the correspondence that has passed between the Japanese and American governments, in regard to the Federal Wireless Loan, is not easy to understand without reference to the contracts referred to especially the agreement concluded between the Ministry of the Navy at Peking and the Mitsui Company, in February 1918. It may be recalled that soon after China had declared war against the Central Powers it was discovered that the Minister for the Navy, Admiral Liu Kuanhsiung, was in negotiation with a Danish agent, acting on behalf of German interests, for the installation of German wireless plants in China. The Allied Ministers protested against this utterly shameless transaction, and the Mitsui Company then stepped in, and concluded an agreement with the Minister of the Navy for the erection of a high-power wireless station on a site approved by the Chinese government, at an estimated cost of £536,267. This amount was to be advanced to the Chinese government and repaid in thirty equal annual instalments, interest at the rate of eight per cent. per annum also being paid on the amount outstanding each year. The contractors were to have sole control of the installation during the period of the loan, unless the Chinese government repaid

Hongkong's Huge Contract

IMAGINE for a moment Hongkong's "Finest Site" surmounted by a solid column of earth rising nearly a mile into the air and you will have some conception of the amount of soil to be torn from Morrison Hill and thrown into the harbor under the Praya East reclamation scheme—the most costly venture yet fathered by the local public works department, Tytam reservoir and the harbour of refuge works not excepted, says the *China Mail*. A hill of 3,300,000 cubic yards is to be demolished and its place taken by flat roads and recreation grounds. A watery waste of ninety acres is to be reclaimed, sea walls and piers built, the area to be divided into blocks suitable for broad thoroughfares, modern godowns and tenements. Existing streets are to be widened or straightened, elaborate drainage works are to be constructed, and many other desirable ends achieved. Light railways are to be laid and temporary drains constructed, and by either one of two ingenious expedients, the traffic arteries passing between Morrison Hill and the existing foreshore are to be left as free from external interference as they are to-day. For six years the work of throwing a hill into the harbor will progress unceasingly. One of the first steps will be to commence work on the huge sea wall planned to start at both ends simultaneously, while the temporary drainage works will speedily give way to more permanent works.

Plans have been completed to the minutest detail (though the method of transport over or under Queen's Road East has not yet quite been determined) and tenders have been called for "reclaiming approximately 90 acres of the Praya East foreshore with materials obtained by cutting down Morrison Hill; protecting the area so reclaimed by sea and quay walls, constructing sewers, stormwater drains, reinforced concrete piers, a refuse boat pier, retaining walls and temporary and miscallaneous works." Tenders close at the colonial secretary's office at noon on June 15, 1921, and it is reasonable to assume that the contract will be let by the middle of the following month. It is understood that the period allowed the contractor to complete the work is six years, as little, if any, of the necessary plant is in the colony at the moment, but it is felt that the work might quite possibly be finished within five years' time. Alterations to the existing drainage system in the area affected are not included in the scope of the tenders now advertised.

The total estimated cost of the scheme to those participating, including drainage works on or incidental to the reclamation, water mains, forming and surfacing of roads, the construction of piers in place of the existing piers which are to be destroyed, supervision, and various other charges, amounts to $3,385,000. The cost per square foot of the area available for appropriation—2,249,000 square feet—is therefore estimated at $1.50 1/2. Adding a premium of 25 cents a square foot, the estimated cost to the lot owner amounts to $1.75 1/2 per square foot. The exact area of land available under the scheme when the reclamation work has been completed will be 87.72 acres, of which 51.63 will be available for appropriation. The remaining 36.09 acres will be divided into roads. Stretching from the Royal Naval Arsenal Yard to the Sugar Refinery at East Point, the reclaimed land will have a minimum width of 600 feet and a maximum of 950 feet (both approximate figures). The area is divided into blocks. With a width of 275 feet, those nearest the foreshore will be admirably suited to the building of godowns, while the more narrow inner blocks (125 feet wide) will be more suitable for the erection of tenements.

Naturally, an important part of the work will be the new sea wall on which it is planned to commence from both ends simultaneously. At the western end a quay wall 235 feet in length providing a depth alongside of 16 feet 4 inches at low water, will be constructed for the admiralty. The remaining stretch to East Point will be protected by the usual sea wall (similar to that in Connaught Road Central), roughly 4,935 feet long. This sea wall—from the new alignment of Arsenal Street to the Sugar Refinery—will be so designed that ships will not be able to come alongside except at piers, though, of course, the usual mooring rings will be provided for junks. The existing piers, of course, will be destroyed and their places taken by public piers—one 35 feet 4 inches wide and 120 feet 8 inches long; and the other T-shaped, 21 feet and 4 inches and 41 feet and 2 inches wide, by 40 feet long. The refuse boat pier (cement concrete block construction) will be 63 feet wide and 58 feet long, providing a depth of water alongside of 15 feet 2 inches at low water. The refuse storage shed, 32 feet 6 inches wide by 58 feet long, will be constructed on new lines. Unlike the present open sheds which allow flies to come and go at will, the new shed will be covered in. Furthermore, the doors facing the harbour will hinge downwards to act as chutes for the discharge of refuse into the waiting barges.

One of the most notable features of the scheme is the generous provision made for roads, none of which will be less than 75 feet in width, while the main east and west road will be 100 feet wide—the same width as Nathan Road, Kowloon, and twice the width of Des Vœux Road in the city. In order that this new main thoroughfare may start at the entrance to the Royal Naval Arsenal Yard, thus eliminating an awkward turning, an exchange of land will be effected with the admiralty and the property known as the Blue Buildings will be resumed and partly demolished.

A Handsome Thoroughfare

The new road, which should make a handsome throughfare when completed, will continue along the reclamation and rejoin Praya East at Malory Street. From Malory Street to East Point the 100-foot road will be preserved by widening the existing praya, and that portion of the existing praya roadway extending from Gresson Street to Malory Street will be widened to 75 feet. The thought of a splendid 100-foot road is not complete without many things, such as broad footpaths and trees, also trams. It may, however, be some little time before trams are seen on the new thoroughfare. The matter rests, not with the government, but with the Tramway Company. The average life of a tramline is 15 years. The Tramway Company has just reconstructed the track through this district, and it does not seem probable that they will relay it elsewhere until they have had a full return on the recent expenditure.

As already mentioned, the material for the reclamation will be obtained by demolishing Morrison Hill which will provide almost, if not quite, sufficient soil for the purpose when reduced at the centre to a height barely 3½ feet above the level of the existing praya.

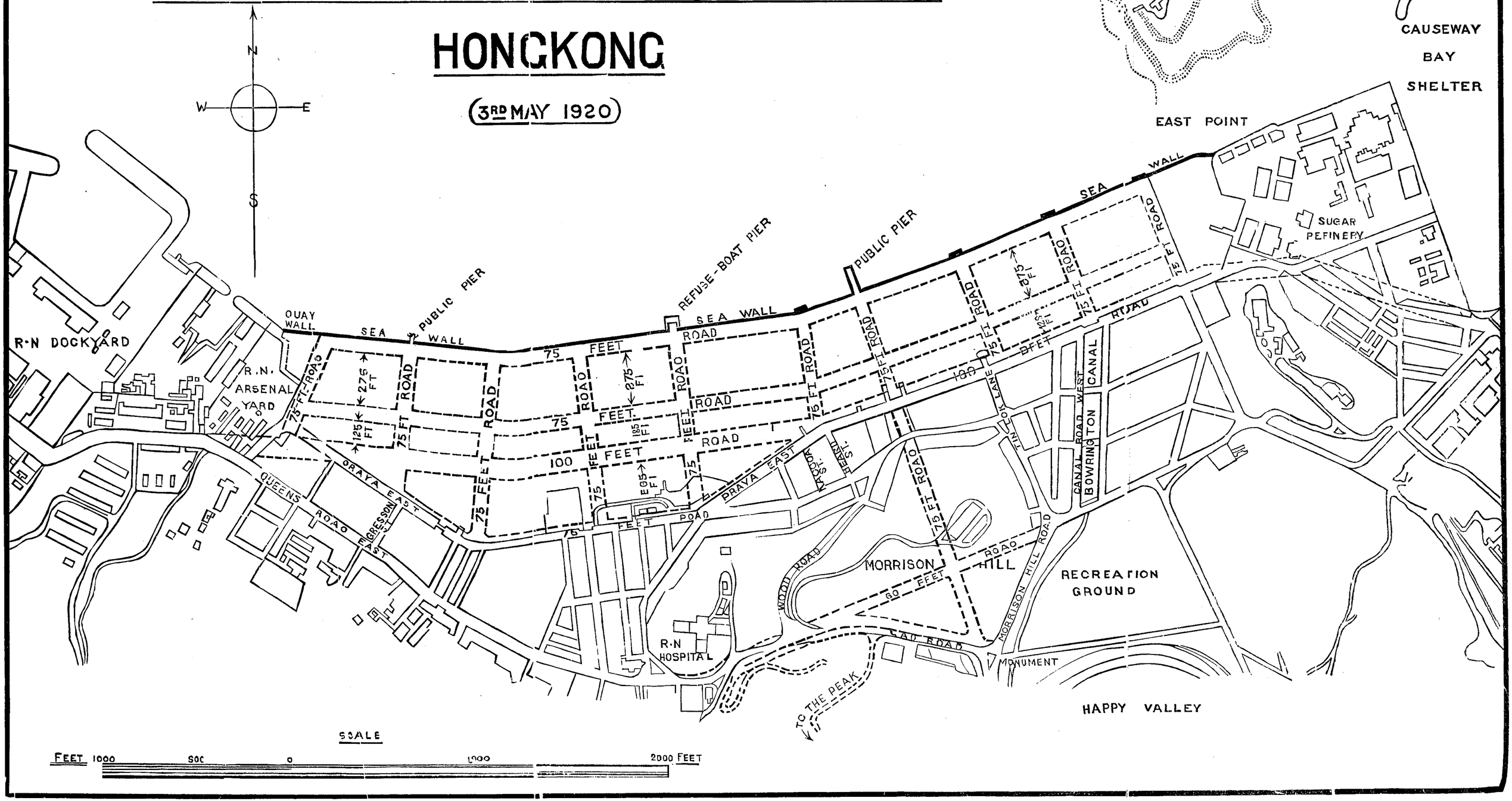
This means that the centre of Morrison Hill will be lowered 175½ feet (from 192 to 16.50 feet above low water), and that the total quantity of filling material to be transported to the reclamation works will be 3,300,000 cubic yards.

Under the Morrison Hill development scheme one through road 75 feet wide will be made extending from the Happy Valley Monument to the new foreshore, crossing the existing Praya East at right-angles between Heard Street and Tinlok Lane. At right angles to that road there will be an extension of Queen's Road East sixty feet wide to join Leighton Hill Road near the Police recreation ground. Entrance to the road to the Peak will be made at the western end opposite the present Royal Naval Hospital entrance. It will be possible to go along the new low road to Leighton Hill Road, or to the Monument at Happy Valley, or enter the road to the Peak. It will also be possible to join the Peak Road

PRAYA EAST RECLAMATION SCHEME

HONGKONG

(3RD MAY 1920)



Courtesy of "China Mail" Hongkong

from the Valley Monument end. This approach road to the Peak Road will be made at a maximum height of thirty feet above the low road in continuation of Queen's Road East.

After making provision for an extension of the recreation ground at Happy Valley by the inclusion of the triangular area on the east side of the new 75-foot road, there will remain 722,000 square feet of land, Of this area, land aggregating 397,000 square feet (9¼ acres) will be available for building. It is gathered that the intention is that Morrison Hill Road from its present junction with Leighton Hill Road to Wongneichong Road at the Valley Monument will form part of the new recreation area and that the present tramway services will pass along the new 75-foot road leading to the praya.

Under the scheme. Bowrington Canal will be filled in and the existing open nullah, which at present discharges into the canal, will be replaced by massive twin concrete culverts, which will be built under the new road leading from the Happy Valley grandstand enclosure to the new harbor frontage. These two large culverts which will carry the drainage of Wongneichong to the harbor, will have a total width at the base of 32 feet and a height of twelve feet. Immediately they are ready for use Bowrington canal will be filled in. As already mentioned, the alteration of existing drainage is not included in the contract for which tenders have now been called, and it is understood that arrangements have been made for this work to be carried out separately in order that the work of the main contract will not be impeded, as it will be necessary to reconstruct the existing drainage system because the whole of the Wanchai drainage system is at a level too low to give sufficient fall for efficient discharge into the harbor at the distance it would be from the new sea-wall. Accordingly, arrangements have been made for intercepting the existing drainage until the Wanchai system has been reconstructed at a higher level. Until the big culverts are in use two, or perhaps three, "turnouts" or open intercepting sewers, will be provided. Free for reclamation work, the existing foreshore, will soon be covered up. Incidentally, the existing foreshore, which has been known to emit offensive smells at low tide, will be rendered less disagreeable while the work of reclamation is in progress, thanks to these open sewers.

An Awkward Question

How is a hill to be demolished, transported across several streets, and then dumped into the harbor? Given the necessary plant and labor the first and last portions of the question present no insuperable difficulties. Not so the question of transport. In the contract for which tenders have been called, provision is made, it is understood, for contractors to tender so far as the material obtained by the demolition of Morrison Hill is concerned, for the following alternative modes of transport:—(*a*) The whole by proposed transport lines under Bowrington canal bridge, Praya East; (*b*) the whole by overhead transport lines between Hard Street and Tinlok Lane; (*c*) partly by (*a*) and partly by (*b*); and (*d*) the whole by such other methold as the contractor tendering may desire to adopt, full details of which he is requested to submit with his tender. It is distinctly made clear that the whole of the filling material shall be transported without crossing Praya East on the level so that there will be no interruption to traffic. In the unlikely event of the overhead method meeting with final favor, it is definitely stipulated that a minimum headroom of 18 feet must be provided above the level of the tramway service. Consequently in any event there will be no interruption in the traffic on Paya East.

The Brain on the Scheme

The most feasible proposal seems to be that made by Mr. John Duncan, A.M.I.C.E., public works department executive engineer, whose resourceful brain has directed the preparation of all plans, surveys, and soundings connected with the scheme —indeed, it might be said with justice that Mr. Duncan is the guiding genius of the whole scheme, so great the thought and skill he has devoted to making it a practical reality. As "the engineer in charge of the Praya East Reclamation Works" (not by any means his only harbor work, great though it is), Mr. Duncan originated the plan for transporting the Morrison Hill material under Bowrington Canal bridge. The track lines, it is planned, will leave the hill by crossing Morrison Hill Road opposite the Police Club. They will then pass along the Canal Road west. Half-way along they will branch off into the canal and pass under the bridge between the west pier and the west abutment and so to the field of reclamation. This scheme, at first sight so simple, raised one little awkward problem. As there is not sufficient headroom between the level of high tides and the underside of the Bowrington Canal Bridge for the passage of a loaded truck and as the bridge cannot be raised without serious interruption to the low level tramway service it has been arranged to construct the transport lines in a concrete trough three feet below high water. The drainage of the canal will discharge through the remaining two spans of the bridge. Consequently trucks will be trailed to the head of the incline passing under the bridge, released by the locomotive on the shore side and seized by another locomotive waiting on the harbor side of the bridge. In this way the whole of the material can be transported from Morrison Hill to the reclamation area with the maximum of efficiency and economy and the minimum of danger to those engaged in the work and the public alike. Furthermore, the moment work is completed on the big culverts under the new road leading to the foreshore the waters can be permanently diverted, as intended under the scheme. Locomotives will not pass under the bridge, but there will be ample room for the passage of loaded trucks, as the line will drop one in 130 and rise the other side at a similar incline. The lowest portion of the line will be at a level of 6 feet above low water, but as the tide will rise to nine feet above low water, a portion of the line will actually be below sea level for a time of the day. Scientific shunting on both sides of the bridge will ensure that the trucks are handled with the minimum of delay.

The advantages of the scheme, direct and indirect, are many. Of the latter a notable instance is the practical certitude that the new 100-foot road, which is such a prominent feature of the project, will some day be connected up with Causeway Bay and the new wide road leading to Shaukiwan. Time alone can tell the ultimate benefits that the project will bring in its train. For the moment we stand waiting for the first ring of the hammer that will proclaim the great work has begun.

The Chartered Bank of India, Australia & China

At the sixty-seventh ordinary general meeting of the shareholders of the Chartered Bank of India, Australia and China held in London on the 8th of April the Chairman, Sir Montagu Cornish Turner, in speaking of the future course of Eastern trade said, "It is dangerous even in normal times to attempt to forecast the course of events, and to essay to do so now, under present abnormal world conditions, would be more dangerous still; but it may not be imprudent to state that, judging from cables reaching us this week from our respective agencies and branches, the outlook in the East is much happier, and that indications from the several spheres point to a distinctly better undertone, which we hope will, in the course of time, develop."

Later, Sir Montagu Cornish Turner said, "You will be asked to-day to confirm the election of Sir John Jordan, G.C.I.E., to a seat on the board. Sir John has had an extraordinary period of service in China from 1876 to 1920, and for the past fourteen years filled the position of British envoy extraordinary and minister plenipotentiary with great honor to himself and with great advantage to the British empire. By his tact, his diplomacy and his genial nature, Sir John Jordan has won a name for himself amongst official and non-official Chinese which will never be forgotten."

The capital of the Bank has been increased from £1,220,000 to £3,000,000 and the reserve fund now stands at £3,500,000.

Engineering, Financial, Industrial and Commercial News

AUTOMOBILES

Automobiles, Tsingtau.—Vice-Consul Allman calls attention to the fact that Tsingtau has perhaps the best roads of any city in the Far East, and is therefore well adapted to the use of motor cars. The main streets in the city are asphalted and the other streets and roads in the immediate district are macadamized. The road construction under way in the Shantung province will also create a greater demand for cars, probably of the cheaper-grade passenger cars and motor trucks. At present Shanghai supplies the Tsingtau district with motor cars and accessories, but the local agents and garages are dissatisfied with this source of supply because of the uncertainty of getting cars and supplies when needed.

Kwangteh-Szean Automobile Road.—Construction of an automobile road between Szean, Chekiang, and Kwangteh, Anhuei, a distance of about 45 miles, has been started by the local merchants. At the last conference of the promoters, an agreement was reached that the work will cover the building of a new road from Szean to Chiapa and the repairing of the old main road from Chiapa. to Kwangteh (all to be 15-ft. wide, and 25-ft. where automobiles should meet) at an estimated cost of $300,000, including the cost of building bridges and purchasing automobiles. Three automobiles for carrying passengers and seven for freight purposes will run a regular service along this line, 8 times a day. A net annual profit of more than $100,000 is expected to be made when this automobile transportation service is established.

Shanghai-Taitsang Motor Truck Service.—The ministry of agriculture and commerce has approved of the scheme formulated by Tang Wenchih for a motor truck service between Chapei and its terminus Liuho, Taitsang.

AVIATION

Tokyo-Fusan Service.—The establishment of regular aerial transport between Tokyo and Fusan is contemplated within the present year. A company with a capital of Y.10,000,000 is to be formed. It is the intention to extend the service subsequently to Manchurian centres.

Straits Air Service.—An air-service company is being floated in the Straits Settlements by Chinese. Mr. Tan Choo Boon, B.A., a military aviator recently arrived in Peking from Manila in connection with the project. A service between the Straits Settlements, the Philippines and China is contemplated. The Chinese chambers of commerce. Manila and Singapore are supporting the enterprise,

Invents Hydro-Plane.—The Hochi says that Mr. Cho, a director of the Nihom Kaijo-soko Kabushikigaisha has invented a new hydro-plean similiar to the more modern types in western countries. It has a cabin capacity of 50 persons and can also carry enough gasoline for a 3,000-mile flight. Its speed is said to be 100 miles an hour.

Airship for Japan.—The *Pall Mall Gazette* says: "In addition to quantities or armorplate, projectiles and submarine engines now in hand, Vickers are building an airship of the Scout type for the Japanese navy, and the Whitehead Torpedo Factory at Wyke, Dorset, is filling an order for torpedoes for the same service.

These, however, exhaust the list of contracts which are being executed for Japanese naval material, and so far, at any rate, there is no sign of the big battle cruiser order which was rumored to be imminent some weeks ago.

British Aviators for Japan.—When the next group of British naval aviators arrive in Japan in June the Kasumigaura airdrome will be completed and ready for use, if plans of the naval authorities here are carried out. All capital ships of the imperial navy will be provided with one or two airplanes when the airplane tender Hosho, 9,500 tons, is completed at the end of 1922.

The model deck and sliding platform of the Kasumigaura naval airdrome are already completed and the first class of Japanese students to be trained there will consist of 20 members. These will be under the instruction of the newly arrived British aviators.

New Aviation Schools, Japan.—The Shimashizu branch aviation school was opened April 1st at Chiyoda-mura, Chiba prefecture. The Akeno school at Kitahama-mura, Miye Prefecture, was also opened the same day.

BRIDGES

Yellow River Bridge Tenders.—The Government has been advised that the Belgian engineer engaged for the Yellow River Bridge commission cannot arrive in China before the end of June, and it is suggested that the date for the opening of the tenders for the reconstruction of the said bridge should be postponed to the 31st July. This suggestion is under consideration by the ministry of communications. At the request of the Japanese legation, a Japanese railway engineer will be appointed to the commission of Anglo-French-Belgian-Chinese engineers. Dr. Wellington Koo, minister to London, reports that he has engaged a technical expert to report upon the Yellow River Bridge.

Hangchow Railway Bridge.—It is reported that the work on the railway bridge across the Chao-o River, which was being built by a German firm and stopped during the war, is now to be given to a British firm.

BUILDINGS

Memorial Laboratory, Tokyo.—A magnificens structure extending over 300 *tsubo* and costing approximately Y.300,000 will be established at a laboratory of the Juntendo Hospital in commemoration of Dr. Sato's contribution to the medical sciences in Japan, says the Chugai Shogyo.

New Hotel. Tokyo.—The plans call for an expenditure of at least 20 million yen.

"Plans are well under way," to erect a new hotel in front of the Tokyo Station by the Asano interests. There will be 800 rooms capable of accommodating 2,000 guests.

Huge Building Scheme, Manila.—The Manila authorities have formulated a plan for the construction of modern houses, to be financed by the city and later paid for by tenants in long-time instalments. The plan will be the biggest step in bringing an eastern city to modern lines that has ever been undertaken. With 20 blocks to be rebuilt, covering an area of 30 acres, comprising more than 700 homes, an idea of the extent of the work may be gathered.

Tientsin Exchange.—Some Japanese business men in Tokyo and Osaka are taking steps to erect an exchange at Tientsin with a capital of Y.7,500,000.

Y.M.C.A. Building, Soochow.—Tke completion of the Y.M.C.A. building at Soochow has been delayed, as additional buildings are to be erected out of a contribution of $5,000 Gold contributed by Mr. Crane, American minister to China.

New Schools, Japan.—The department of education will build the following schools during the current year: Middle schools, 18; engineering, 9; agricultural, 29; commercial, 13; mercantile marine, 1.

Meiji Shrine Plans, Tokyo.—Work on the outer garden of the Meiji Shrine in Tokyo was commenced in April and it is hoped by 1924 the museum, race course and memorial buildings will be completed.

New Government Buildings, Osaka.—It has been decided to erect the governors' official residence with two other buildings in a suburb of Osaka on a plot of land 3,000 *tsubo* in extent. The buildings are to cost Yen 250,000.

ELECTRICITY

Musashi Electric Tramway, Japan.—A company formed for the construction and operation of a new electric line from Tokyo to Yokohama, running approximately a mile and a half inland from the present railroad, has been formed. The Musashi Electric Tramway Company, as the newly organized firm is called, will also furnish electricity to the villages along the route. The Tokyo terminuswill be at Meguro and at Yokohama, Takashimascho.

A Scheme to make Chapei independent of the municipal electricity department and Shanghai Waterworks is being considered.

A number of Chapei residents, under the leadership of one Chin Wen-li, have petitioned the civil governor stating that as the present system is very unsatisfactory it is essential that a new and more satisfactory system should be introduced.

It is proposed that a new power plant be established by merchants with an initial capital of $300,000, and when capital increases telephone and water supply will be installed.

The Nagoya Electric Light Company has made a contract with the Inuyama Electric Light Company operating at Inuyama, Aichi prefecture, for amalgamation. This is believed to be part of the program of concentrating electric enterprises in and around Nagoya in one consolidated concern as contemplated by a group of business men.

Electric Light, Fukien.—Mr. Yang Yi-fen of Hinghwahsien, Fukien, has subscribed $15,000 to instal an electric light plant.

Electrical Equipment in Siam.—Bangkok is the only city in Siam furnished with electric light and power stations, of which there are two, the Siam Electricity Co. (Ltd.), and the Samsen Power Station. The former supplies light and power to the public generally throughout the city, while the latter is the municipal light and power station for Bangkok, also providing lighting for a large area occupied by royal palaces, and motive power for Bangkok water works, for the opium factory, and for the Siam cement works.

Owing to the fact that no electrical apparatus of any kind is manufactured in Siam, there is a demand for all classes of such goods, with the addition of specialties needed for a tropical country. Electric lighting sets of various makes and sizes are advertised in the local press, but the demand appears to be moderate and limited to the provinces. The import duty on all electrical goods is 3 per

authorities at Paris, M. Long, the governor general of Indo-China, expressed the belief that a loan covering a large part of the cost could be raised in Indo-China.

RIVERS AND HARBOR, IMPROVEMENTS, WHARVES, DOCKS

Grand Canal Dredging.—Merchants of Wusih and Kaingyin will dredge the section of the Grand Canal from the Great Lake to the Yangtze River, a distance of approximately 100 *li*. The canal is being silted up and it will be necessary to dredge it along its entire length and reconstruct the embankments. Two branch waterways and a dike are included in the project. The total cost of the work is estimated at $1,000,000 and an effort is being made to raise the amount by appropriations and subscriptions.

Chefoo Breakwater.—The breakwater for Chefoo Harbor, in accordance with plans to make this north China port thoroughly modern in every respect, has been completed.

The breakwater is approximately at its full height and protected by heavy rubble on the slopes for a length of about 3,200 feet. A total length of 17,000 feet of parapet wall has been built. Work on the mole involved the depositing of 194,000 cubic yards of sand, 167,000 square yards of brushwood zinkstucks and 64,500 tons of rubble in the foundations and lower part and nearly 173,000 tons of rubble in the upper part.

The reinforced concrete caisson for east end of the quay was sunk successfully and filled with concrete and the large masonry blocks in the quay wall and the wing walls have been put in place. About one-half of the masonry superstructure remains to be constructed.

Dutch Expert for China.—The Dutch minister to Peking has suggested to the Chinese authorities the employment of Dutch experts for the improvement of riparian work as a method of promoting foreign trade. He assures the Chinese that Dutch capitalists would be pleased to make any necessary advances to China for the purpose. Acting on this advice the Chinese government has decided to employ a Dutch expert.

Enoura, New Naval Port, Japan.—The construction of a naval port at Enoura, Shizumura, near Numazu at an estimated cost of Y.15,000, which has been under contemplation at the navy office is to be commenced shortly, says a Numazu dispatch to the *Kokumin*.

According to the proposed plan, a tunnel will be excavated through Washizusan, a hill surrounding the village of Enoura, and two wharves will be constructed at Okubo Cape and Sakazure.

New Dockyard, Penpu.—A dockyard will be built at Penpu, an important station on the Shanghai-Nanking Railway, situated on the southern bank of the Wei river, Anhuei, by the general chamber of commerce of Penpu and local Chinese municipal authorities. The work is expected to be completed in June of this year.

San Men Wan Reclamation.—The bureau organized for the preliminary reclamation work at San Men Wan, on the coast of Chekiang north of Wenchow, has been abolished, and placed under the provincial government of Chekiang. A plan to organize a reclamation board to carry out the work on the capital invested by overseas Chinese is under consideration.

River Improvement, Kanagawa, Japan.—The home department has assisted the Kanagawa authorities by the appropriation of Y.417,500 for the improvement of the Tama River during 1921.

Harbor Improvement, Japan.—The home department has set aside the sum of Y.1,310,000 for harbor works in 1921, distributed as follows: Yokkaichi Harbor, Miye Prefecture, Y.270,000; Funakawa Harbor, Akita Prefecture, Y.230,000; Shiogama Harbor, Miyagi Prefecture, Y.250,000; Aomori Harbor, Aomori Prefecture, Y.30,000; Niigata Harbor, Niigata Prefecture, Y.80,000; Nagasaki Harbor, Y.250,000; Nagoya Harbor, Aichi Prefecture, Y.200,000; Hana Harbor, Okinawa Prefecture, Y.150,000.

New Kure Dock.—The Japanese navy department has decided to construct a dock at Kure which will be large enough to accommodate a warship of the 40,000-ton class. It is expected that the construction work will take about three years, and when it is completed the 8-8 squadron will be perfectly equipped.

New Kiangnan Dock.—Plans have been drawn up for a new dry dock at the Kiangnan Dock and Engineering Works, Shanghai, says the Chinese Press. Work will commence shortly on the new dock which will measure 500-ft. long and 200-ft. deep.

Hongkong Reclamation.—Tenders are invited by the government for reclaiming approximately 90 acres of the Praya East foreshore with materials obtained by cutting down Morrison Hill; protecting the area so reclaimed by sea and quay walls: constructing sewers stormwater drains, reinforced concrete piers, refuse-boat pier, retaining walls and temporary and miscellaneous works.

RAILWAYS

Locomotives for F.M.S.—Consul H. J. Dickinson reports from Singapore, Straits Settlements, that orders have recently been placed in the United States for twenty American-made locomotives for use on the Federated Malay States railways, their use in the past having given every satisfaction. Ten of these locomotives will be delivered at Penang and ten at Singapore.

British Locos Arrive.—The s.s. *Pembrokeshire* brought 1,000 tons weight of locomotives, built

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in the United Kingdom for the Chinese government railways. These will be unloaded at Woosung and assembled at the S.-N.-R. shops. This is the third consignment of British-built locomotives which have already arrived, and others will follow.

C.E. Railway Board.—The British, French, Japanese and American governments have commenced discussions with a view to the creation of an international administration for the Chinese Eastern Railway, this administration to be in the nature of a trust, rather than of a receivership, until Russia recovers and is once more recognized by the powers.

It is not stated which of the four powers proposed the plan for international administration of the Chinese Eastern Railway, but all of them are interested in it, either on economic grounds or because they have advanced money to the railway and hold its bonds. It is understood that the internationalization plan would have the effect of neutralizing the Chinese Eastern Railway pending the time when Russia can once more undertake the control and operation of the line.—*China Press.*

Canton-Hankow Railway.—Mr. Hsu Sung-hao, managing director of the Canton section of the Canton-Hankow Railway proposes to complete the upper section to Ping Shek by floating a loan of $20,000,000, to be secured by the constructed section of the line, a distance of approximately 460 *li* or 139 miles.

Kiukiang-Nanchang Railway.—A recent decision has been made by the directors of the Kiukiang-Nanchang Railway, to turn the line over to the ministry of communications to become a part of the Chinese government railways. The action is a result of the possible foreclosure on the part of a Japanese syndicate which is said to have loaned more than $20,000,000 to the management. The ministry of communications has not as yet indicated its willingness to take over the line and assume the indebtedness. Protests are being made by the Japanese interested.

Suiyuan-Paotaochen Railway.—The Peking-Suiyuan Railway Administration has petitioned the ministry of communications to build a line from Suiyuan to Paotaochen, a distance of 300 miles, and to raise the needed capital of $5,000,000 by issuing bonds through Chinese and foreign banks.

Railway Construction, Korea.—The 1921 budget of the Chosen administration allocates for communications, Y. 1,466,920; subsidies to light railways, Y. 380,850; and railway building and improvement, Y. 6,500,000.

Chefoo-Weihsien Railway.—The ministry of communications will shortly appoint a director and form an administration for the Chefoo-Weihsien Railway. The present construction bureau will become a department under the railway administration.

Sleepers for Kirin-Changchun Railway.—An order for 150,000 railway sleepers has been placed by the Kirin-Changchun Railway with a Japanese firm (the Ta Po Shang Hui).

Locos for Russia.—The railway commission of Soviet Russia has been instructed to order from foreign countries 2,000 locomotives for freight trains and parts of locomotives to the value of 60,000,000 Swiss *kronen* and pumping machines to the value of 15,600,000 *kronen* and to repair 4,000 locomotives in local shops. 1,000 locomotives have been ordered from Sweden, a part of which will be ready by this summer. The rest will be delivered before the end of 1921. A number of contracts have been signed with German firms for the construction of locomotives of the Russian type.

Mengtze-Boyi Railway Project.—The military and civil governors of Yunnan are said to be contemplating the construction of a railway from Mengtze to Boyi. The ex-Tuchun, General Tang Chi-yao, proposed the construction of this line last November and the scheme progressed so far as the nomination of Mr. Lo Pei-chin, the ex-civil governor, as director. It is understood that the new civil and military governors will authorize Mr. Lo to continue with the project.—*Reuter.*

Chuchow-Pingkiang Railway.—General Chou Heng-ti, commander-in-chief, in Hunan, and General Chen Kuang-yuan, Tuchun of Kiangsi, have agreed to co-operate in the construction of the Chuchow-Pingkiang Railway. The railway passes through the two provinces and the scheme, agreed on, provides that each of the parties to the agreement shall undertake the construction of the line in his own province. General Chen Kuang-yuan has telegraphed to the government, asking for its sanction for the proposal.—*Reuter.*

Siberian Coal Mine Railway.—A Harbin despatch to the *China Advertiser* says:

"In accordance with the proposal of the department of communications, the Far Eastern government has decided to build a branch line to Khariyalchinsk(?) at the estimated cost of 100,000 gold roubles."

Japan's Railway Program.—The amount earmarked for railway improvement during the current year is roughly Y.141,092,400, of which 65 million yen will be spent for construction, to be appropriated in the following order:—

To the Tokyo Railway Bureau...	Y.8,700,000
„ the Kobe Railway Bureau ...	„ 7,000,000
„ the Nagoya Railway Bureau	„ 5,500,000
„ the Moji Railway Bureau ...	„ 6,800,000
„ the Sendai Railway Bureau...	„ 6,800,000
„ the Sapporo Railway Bureau	„ 5,000,000
„ the Kobe Improvement Office	„ 6,200,000
„ the Tokyo Improvement Office	„11,000,000
„ the Atami Line	„ 8,000,000

Kung-Chang-Lin Railway.—The Peking Jih Pao is authority for the announcement that the Mitsubishi Company, is negotiating with the authorities of Mukden for permission to operate the Kungchang-lin iron mine and to build a railway from Mukden to Kung-chang-lin for the transportation of coal. Since the proposed railway passes through a mountainous section, involving great expense in its construction, it is proposed that it be built under Sino-Japanese joint control. The intention is to extend the line later to Liangyang, where extensive iron mines abound.

New Railway, Hokkaido.—A charter has been granted by the department of railway to the Hokkaido Colliery and Railway Company for the construction of a steam railway line, 28.50 miles in length, at the cost of Y.1,830,000. The proposed line is to start at Kushiro Station on the government lines and extend to Shitakara, Akangun, Kushiro province.

Lajin Railway, Korea.—In order to survey a railway route between Sangsampong and Lajin, Mr. H. Takakura, Assistant engineer in the communications bureau, accompanied by 13 men, arrived at Lajin from Seoul a few days ago, and it is expected survey will be finished in about tow weeks. In this connection, local Japanese paper says that the arrival of the party has attracted great attention in the locality now that the fever for the building of the Kirin Hoilyong railway has somewhat revived.

Rolling Stock Tenders.—The managing director of the Peking-Hankow Railway invites tenders for 6 first-class sleeping cars, 6 second-class sleeping cars, 6 composite first and second-class passenger cars, 6 dining cars, 6 third-class passenger cars with restaurant and 10 third-class passenger cars. Drawings and specifications may be obtained from the head office at Peking upon payment of $25, Mexican. Quotations c.i.f. railway wharf at Hankow. Tenders to be opened 3 p.m. on July 1st.

Tsang-shih Railway.—The section of the new railway between Tsangchow and Shihchia-chuang which is being erected by workmen from the famine stricken population is estimated to cost $1,840,000.

Japanese Railway Extensions, 1921.—The lines projected by the department of railways for 1921 total 260 miles. The name of the line and approximate date of completion is here given: Kohama line, 12 miles, April; Matsuda line, 10 miles, June; Saijo line, 16 miles, June; Hidarizawa, 8 miles, June; Hoshiba line, 9 miles, June; Nichibu Minami line, 14 miles, June; Joitsu Minami line, 13 miles, July; Ikiho line, 10 miles, July; Hamada line, 9 miles, August; Yamano line, 14 miles, Aug.: Nemuro line, 6 miles Sept.: Joitsu Kita line, Sept.: Somo line, 10 miles, Sept.: Minato line, 17 miles, Sept.: Hidari Sawa line, 2 miles, Sept.: Nayori line, 17 miles, Sept.: Hoki Kita line, 5 miles, Sept.: Netsu Naka line, 10 miles, Nov.: Takayama Line, 8 miles, Nov.: Masuda line, 5 miles, Nov.: Yokoguro East, 4 miles, Mar. 1922: Yokoguro west, 5 miles, March: Hidari Sawa line, 5 miles, March: Nichibu north, 6 miles, March: Nichibu south, 18 miles, March: Hosojiwa line, 2 miles, March: Sugiyasu line, 3 miles, March.

Peking-Suiyuan Extension.—To finance the construction of the extension from Suiyuan to Paotowchen, the Peking-Suiyuan Railway has decided to issue short-period domestic bonds to the amount of $5,000,000. The general conditions on which the bonds are issued are:—

1. Interest will be 7½ per cent. annually.
2. Redemption begins with the second year at $1,250,000 for four successive years.
3. The entire revenue of the Peking-Suiyuan Railway will be the security.
4. The subscription will end on the 30th May.

Materials will be purchased in May and tenders for the construction are invited. The work, it is hoped, will be started before the end of the year.

The section from Pingtichien to Suiyuan, a distance of 300 *li*, has been finished in less than a year, despite adverse climatic conditions.

F. M. S. Railway Receipts, 1920.—The railway receipts last year from all sources amounted to $17,316,000, an increase of 15.8 per cent. over 1919. Expenditure amounted to $16,103,000 compared with $11,286,000 in 1919, an increase of 42.6 per cent. The nett earnings were $1,213,000 or less than 1 per cent. on the capital invested in the railway up to December, 1920, viz., $144,000,000.

Railway Conditions in Russia.—According to the Russian Soviet press there are now thirty-one railways in Russia that have suspended traffic altogether as a result of the fuel famine. Of these nineteen are classed as major or important trunk lines and the other twelve are of secondary importance.

The motive power of the railways is also said to be in bad shape, for at the beginning of this year about 58 per cent. of the ten thousand locomotives of Russia were out of commission, and at no time during the past year were 50 per cent. in commission.

S. N. R. Branch, Changchow.—As previously reported a short branch line will be built from Changchow, one of the important stations on the Shanghai-Nanking Railway, to Chi-tze-yen, a food producing centre in the neighborhood of Changchow, to facilitate the transportation of food stuffs. The survey of the line has been made, and construction, estimated to cost $10,000. has been started.

C. E. R. Loan.—The Chinese Eastern Railway borrowed $3,000,000 from domestic banks to pay off a debt of $2,000,000 and to defray other expenses.

ROADS

Good Roads Movement, China.—The first annual meeting of the Good Roads Movement of China will be held on May 5 at the Chinese Y. M. C. A. at 120 Szechuen Road at 5.15 p.m. The date and purpose of this meeting have been announced by Dr. C. T. Wang, who is the chairman of the executive committee and invitations have been sent to the leading men of Kiangsu and Chekiang provinces, including the governors and members of the provincial assemblies. The meeting proposes to launch a movement national in scope and which will claim the support of every person interested

the internal pressure. But with a neighbor whose procreative recklessness is maintained in check only by severe natural antidotes, it is futile to expect that the Japanese will submit to any restriction on their increase, while China pursues an opposite course. If the doors of other countries are closed to them and there are vast waste spaces in Eastern Asia awaiting settlement, we must expect that a virile people will fight for their right to occupy them before mutely accepting the alternative of race suicide.

Will the world refuse to heed the lesson of the last Great Sacrifice? Will the United States repeat the errors of European diplomacy and adopt a policy in the Pacific that will tend to exert the same pressure upon Japan as Europe brought to bear upon Germany? If the American people are determined that this policy be pursued, then Japan will have no option left than to follow in the footsteps of Germany and send her young men out into the world to capture its trade in order that the masses at home may live. Is Japan, like Germany, to be compelled to absorb her 700,000 new children a year into the ranks of her industrial army for the expansion of her factories, her mills and her looms? If so, we must face the consequences and meet their competition. For Japan must live. She must sell in order to purchase food. Like England, her very existence will depend upon foreign trade. She will create a vast mercantile marine and construct a formidable navy to ensure that her food lines will always be maintained open. She will become the Germany of the East, reaching out to all the markets of the earth to dispose of her products. She will develop into the England of Asia, a nation whose very life depends upon the maintenance of a powerful fleet. In the struggle for existence, Japanese products, like those of Germany, will find their place in the markets of the world, and the keen competition will engender trade rivalries, hatred, and ultimately strife.

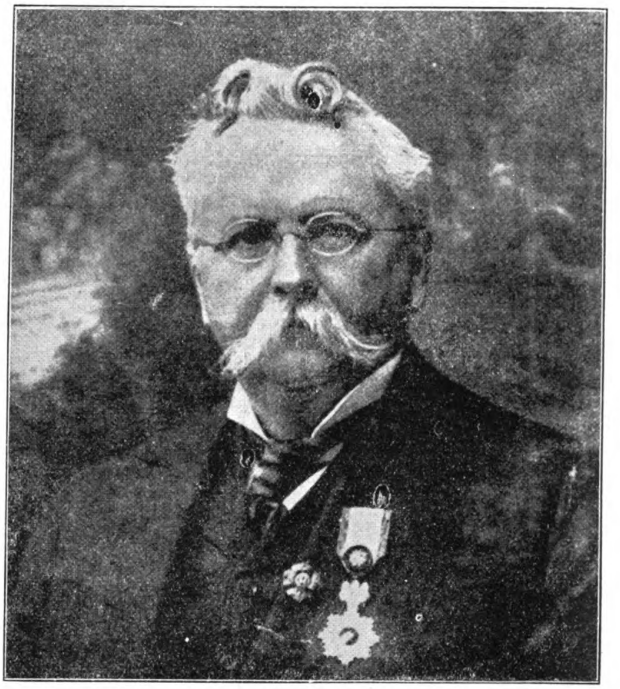
If, in addition to closing our own doors to the mounting millions of Japan, we are to follow her into Asia and obstruct her economical and commercial expansion in regions still open to her in Siberia, in Manchuria and Mongolia, and permit her to be barred from the Philippines, are we not deliberately placing ourselves in the position, where, sooner or later, we may be compelled to fight Japan? If, in addition to carrying the burden of the Monroe Doctrine, we are to become the Guardian of China, the Protector of Russia and the Policeman of Central Asia, can we wonder that the Japanese masses look upon us with ill-will.

It is well for Americans to ponder over these truths, and give more thought and study to the problems of population than to sentimental ideals. We make no claim to infallibility. Perhaps our deductions are wrong, but they invite research and discussion. Read the works of J. O. P. Bland, and what he has to say about the reckless procreative powers of the Chinese, the root of all their woes. Lay aside sentiment and ideals long enough to probe into this phase of the Pacific problem. Then let us ask ourselves, are we to become the Don Quijote of the Twentieth century, or play the role of the "nigger who squat on the safety-valve of the "Prairie Belle." The fundamental laws of nature cannot be set aside by sentiment, ideals or loose talk about the germs of Democracy, or other popular catch-words which appeal so strongly to the American people. Monkeying with the blow-off of a high pressure steam generator can result only in a repetition of the disaster which befell Europe in 1914.

The Yellow River Bridge

IN the building of the Yellow River Bridge, tenders for which have already been invited, the ministry of communications does not seem to have left any stone unturned in its effort to bring about the best possible result. A commission of four advisers, bridge experts selected from America, Belgium, Britain and France, has been appointed to examine all designs to be submitted.

Some time ago the ministry invited Dr. J. A. L. Waddell to become the American member of the commission and Dr. Waddell has accepted. The invitation and acceptance were made through the Chinese minister at Washington. Dr. Waddell will therefore appear as the American representative on the board of advisory engineers to determine upon the award of contract in the Yellow River Bridge competition and has recently arrived in Peking.



Dr. J. A. L. Waddell,
Member of the Bridge Commission

Dr. Waddell is the author of several books his latest being "Bridge Engineering" in two volumes dedicated to the Emperor of Japan as a mark of the author's appreciation of the decoration "Knight Commander of the Order of the Rising Sun" conferred upon him by the Emperor.

A brief summary of the main features of Dr. Waddell's life follows:—

WADDELL, JOHN ALEXANDER LOW, C.E., B.A. SC., MA. E., D. SC., LL.D., D.E., Kogakuhakushi—Kansas City, Missouri. Born Port Hope, Ont., Jan. 15, 1854. Educated, Trinity College School, Port Hope; Rensselaer Polytechnic Institute, Troy, N. Y. (C.E., 1875); McGill University (B.A. Sc., 1882; Ma. E., 1882; D. Sc., 1904); hon. LL.D., Missouri State University, 1904; hon. D.E., University of Nebraska, 1911; hon. D.E., Imp. Unv. of Japan, 1915. Draftsman Marine Department, Ottawa, 1875; Engineer, Field Work, C. P. R., 1876-1877; Assistant Professor of Rational and Technical Mechanics, Rensselaer Polytechnic Institute, 1878-1880; Chief Engineer, Raymond & Campbell bridge builders, Council Bluffs, 1881-1882; Professor of Civil Engineering, Imperial University of Japan 1882-1886; practiced alone, Kansas City, 1887-1889; Partner of Waddell & Hedrick, 1899-1906; Partner of Waddell & Harrington, 1906-1915; Partner of Waddell & Son since 1915.

My river journey of seventy miles from Kuala Krai to Pulai took sixteen days; and I had not travelled very far above the junction of the Pergau river before the difficulties of transport became apparent. The river had become impassable for anything but light-draft prahus; we encountered rapid after rapid, up which our prahus often had to be dragged with long ropes; and through many rocky and sandy places we had to dig channels for our craft.

The Chinese town of Pulai, which is known to have existed for over a hundred years, is a great contrast to the Malay kampongs with their jungle-constructed houses. In Pulai the houses are two and three storeys high, the thick walls being constructed of a lime concrete of rounded pebbles and river sand. The natives mostly make their living from alluvial mining; but the Kelantan government gets very little in the way of taxation from the district, as most of the traffic is by foot over the border into Pahang.

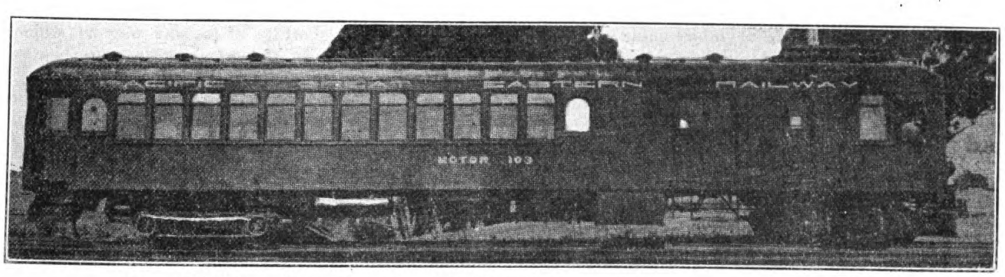
The Pulai Chinese are the remnant of a much larger population of the past. Some hundred years ago the ruling Rajah of Kelantan made over to his son the taxes on rice; these the Pulai Chinese refused to pay and, when the Rajah's son came to enforce the payment, they killed him. In revenge for this a punitive expedition was sent, with the result that most of the Chinese were killed, the Galas river ran red with blood, and was afterwards blocked by rotting corpses. Only a few of the residents escaped by hiding in the jungle; and those are said to be the ancestors of the present population. I had a number of Chinese working for me at Kundor and, although only one or two of them could speak Malay, we soon came to an excellent understanding. I found them a hardworking, jolly, capable crowd, and eight of them worked my prahus downstream for me as far as Kuala Lebir, that being much farther than they had ever been away from Pulai before.

Kundor proved to be about eight miles down river from Pulai; and an inspection showed that much alluvial gold must have been won there. The Chinese had constructed several miles of water-races, and in some cases they had cut these for a depth of 15 or 20-ft. through the granite. The property had been worked by a Dutchman in more recent years, and he had done a fair amount of tunnelling and shaft-sinking before his death. The reputedly richest portion of the property was at the junction of the granite and the slates, and I made arrangements with the Pulai Chinese for the opening up and repair of the old workings at the conclusion of the approaching wet season, only to find on my return to Kuala Krai that the ground was not available.

Coming down stream I stopped, inspected, and sampled several quartz outcrops of good appearance with a view to a return visit at a later date.

The occurrence of a tin lode was rumored on the border of Kelantan and Trengganu, and it is possible that such lode may exist, for in the state of Trengganu the privately-owned Bundi tin mine is reported to have given good returns to its owner. The neighboring state of Pahang gives the only other example of lode tin mining on a large scale in Malaya. In Pahang the Chinese and Siamese are known to have worked the soft outcrops of at least forty lodes. These lodes are in the slates near the junction with the granite, into which they sometimes penetrate. In Trengganu wolfram veins are found in formations of quartzite, schist and shale overlain by clays. The veins are worked only down to old water level, below which the sulphides of iron, copper and arsenic occur. The ore, as sent away, contains 70 per cent. of tungstic acid. Wolfram found in the Federated Malay States is associated with tin; in Trengganu wolfram is found alone.

Alluvial tin is found in limited quantities in Pahang, Trengganu and Kelantan; and it is a surprising fact that so much alluvial tin, shed from the range which forms the backbone of the peninsula, should so far, have been found on the western side and so little on the eastern side of the range. When it is remembered that the Malay States have produced tin to the value of £180,000,000, the small proportion obtained from the eastern states gives much food for thought.—*Mining Magazine.*



Type of Hall-Scott Motor Car, ordered for the British Section of the Kowloon-Canton Railway

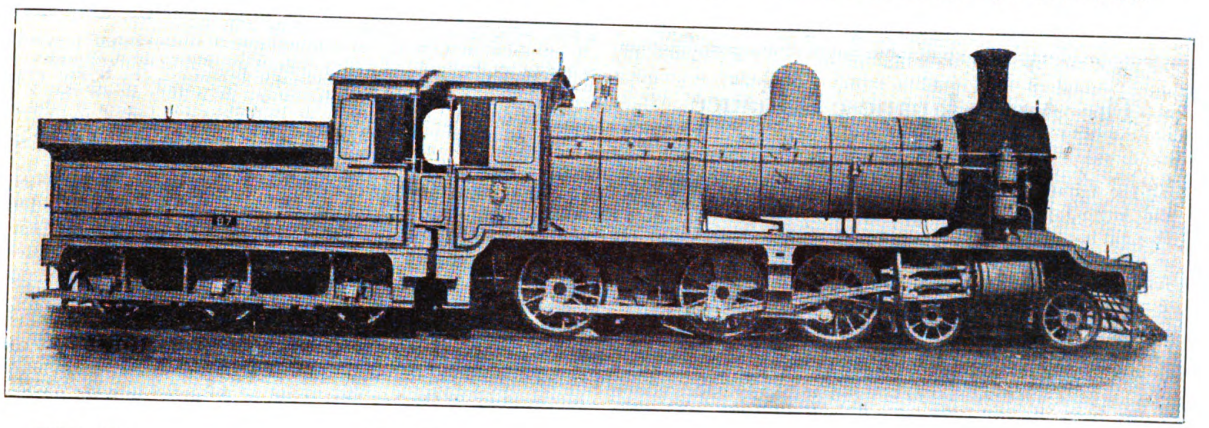
Motor Coaches for the Kowloon-Canton Railway

THE Hongkong government is to experiment with motor coaches as a means of solving fast local traffic on the British section of the Kowloon-Canton Railway. Conditions in the leased territory are very similar to those of certain sections of the Western United States, where a cheap system of transportation is necessary to handle the passenger traffic through a sparsely-inhabited district. An order for two motor coaches and one trailer has been placed with the Hall-Scott Motor Car Company of San Francisco, through their China agents (The Northwest Trading Company), and are expected to arrive in the colony in September. The motor cars are 62 feet long, driven by six cylinder internal combustion engines of 150 H.P. using kerosene as fuel, and are guaranteed to develop a speed of 45 miles per hour. The motor coaches have a seating capacity for 60 and the trailer for 80 passengers. The coaches are divided into first and third class, and the trailer into second and third-class sections. The cars will be built of steel, with double roof for ventilating, lighted by electricity and equipped with fans.

This type of motor car has been in successful operation for years on the Pacific Coast, and provides an economical solution to traffic problems where it is inadvisable to add to the locomotive rolling stock.

British Locomotives for the S. N. R.

THE arrival and quick erection of six new locomotives in Shanghai recently marks the re-instatement of British rolling stock on China's railways. After a seven years' absence from the market British merchants have been successful in securing orders for the six locomotives mentioned above being the last shipment in a lot of thirteen. The locomotives above were manufactured by the North British Locomotive Company, Ltd. represented in Shanghai by Messrs. Jardine, Matheson & Co., Ltd. and were purchased by the Shanghai-Nanking Railway. The type of locomotive, together with its main dimensions, is shown below.



TYPE 4-6-0.

ENGINE.

Cylinders ...	Diameter	18-in.	
	Stroke	26-in.	
Wheels ...	Coupled, Diameter	4-ft. 9-in.	
	Bogie, ,,	3-ft. 0-in.	
Wheel-Base	Rigid	13-ft. 9-in.	
	Total	24-ft. 11-in.	
Working Pressure ...		180-lbs. per sq. in.	
Heating Surface	Tubes ...	1,467 sq. ft.	
	Firebox ...	163 ,,	
	Total... ...	1,630 ,,	
Firegrate Area		28 ,,	
Boiler Feed		2 Injectors No. 8	
Tractive Force at 75% of Boiler Pressure ...		19,950-lbs.	
Weight	In Working Order	60 tons 6 cwts.	
	On Coupled Wheels	46 ,, 7 ,,	

Boiler Plates, Steel. Firebox Plates, Copper. Tubes, Brass.

TENDER.

Wheels, Diameter ...	3-ft. 6-in.
Wheel-Base	13-ft. 0-in.
Tank Capacity ...	3,500 gallons.
Fuel Space	315 cub. ft.
Weight, Full ...	42 tons 5 cwts.

ENGINE AND TENDER.

Wheel-Base, Total ...	48-ft. 6-in.

World Demand for Locomotives

SIR W. G. Armstrong Whitworth & Co., Ltd., of London at present have in hand an order for 200 locomotives from the Belgian State Railways, secured in the face of sharp foreign competition. The entire contract given out by the Belgian government amounted to 350 locomotives, and it had practically been decided that this should go to a foreign competitor. The British firm, however, was at the last moment able to obtain the major portion of these.

In conversation with a Press representative a member of the firm said they had always made a point of going abroad after fresh markets. To bring work into the country the contract in question had been taken at a strongly competitive price which was a little advance of that quoted by the foreign rival. "The quality of our work, however," he continued, "was the deciding factor. Many of the workers in our locomotive department are old "gun men," who, of course, have always been accustomed to the highest class of work. The work being turned out now is as good if not better than before the war, whilst as far as we are concerned the workers are beginning to give a higher output, though there is still room for improvement in this respect. The order for 200 locomotives from Belgium is but a portion of those we have on hand. India, the Argentine, Java, Ireland, Trinidad and South Africa amongst other countries are to-day on our books. Considering it was less than eighteen months ago when we delivered our first locomotive, the development in this branch speaks well for the skill and thoroughness of the British worker. In 1919 we employed 800 men in our locomotive department at Scotswood ; to-day there are 3,000, and more will be required. There will be an increasing demand for locomotives from all parts of the world, and given cheaper coal and materials, together with a higher output per man, we shall have little to fear from foreign competitors, and Great Britain should supply a very large proportion of this demand.

"Germany, without doubt, is the competitor most to be feared. Not only does that country turn out a good class of work, but it is helped by the rate of exchange and the low cost of production. Under present conditions Germany is able to undercut us very considerably."

In addition to turning out large numbers of new locomotives, Messrs. Armstrong Whitworth have signed a contract for repair of Russian locomotives. This work will be undertaken in Great Britain, and alone will give employment to 2,000 men for five years. The engines will be shipped over to Russia at the rate of 300 yearly.

Engineering, Financial, Industrial and Commercial News

AGRICULTURAL

New Enterprise at Soochow.—An agriculture and pastural company capitalized at $300,000 is being organized at Soochow, Kiangsu, by the local influential personages, Mr. W. S. Woo and several others. This is a new enterprise of its kind in an inland city, and it will be opened as soon as the registration with the industrial commissioner of Kiangsu has been sanctioned.

AUTOS

The Nisshin Automobile Co., Ltd., Japan—Established with a capital of Y.500,000, quarter paid-up, to manufacture cars and attachment. Office, 232 Shichome, Sone-zakikami-cho, Kita-ku, Osaka. Mr. K. Imanishi is managing director.

Omnibus Service, West Java.—A company has been formed to operate an omnibus service in West Java under the name of "Omnibusdienst West Java." While this is not the first omnibus company to be operated in the Dutch East Indies, it is of interest that it is to operate in West Java, as the motor bus is not now in use in that part of the island. There is an opportunity for a large development in this thickly populated island, and it is reasonable to expect that other companies will be organized in other districts.

New Auto-Bus Line, Japan.—The Biyedo Automobile Company, of Fujisawa-machi near Yenoshima has been granted permission to operate a public auto-bus line between Fusamachi and Yoda.

Yokohama-Kamakura Motor Bus Line.—Permission has been granted to Mr. K. Mori to operate a motor bus service between Yokohama and Kamakura charging a fee of Y.1.50 for passage one way.

Yangtze Machinery Works Manufactures Automobiles.—The Yangtze Machinery Works, established at Chanchiachi, below Hankow, some dozen years ago, is rapidly growing an important institution in the manufacturing circles of Hankow and Wuchang. It is now understood that a Cantonese engineer of the establishment has succeeded in turning out an automobile quite comparable to machines manufactured in America and European countries. The works will shortly enter into the business of making cars after the inventor's pattern on a large scale, according to a recent advice from Hankow.

The Maruwa Industrial Co. was organized recently to do a business in automobiles. Office at 2440 Kameyedo-machi, Takyo-fu. Representative: Mr. D. Takeda.

AVIATION

The Tokyo-Changchun Test Flight.—Four Japanese planes will participate in the experimental flight from Tokyo to Changchun. The machines are of Japanese make and will start from Japan across Korea, thence to Fengtien and finally to Changchun whence they will return by steamer to Japan. The flight is postponed indefinitely.

Aircraft Factories, Japan.—The Mitsubishi Company and the Kawasaki Dockyard Company have decided to enter the aircraft business, and several English engineers engaged by the former company have arrived in Japan to supervise the factory being erected at Kagamiga-hara. The Kawasaki Dock Company have purchased 50,000 *tsubo* of land at Inaba-gun, Gifu prefecture, near Kagamiga-hara for the erection of a similar plant.

Seaplanes on Upper Yangtze.—A scheme is being launched to start a seaplane service between Ichang and Szechuan ports.

Funds for New Work: China.—General Ting-Chin, chief of the aviation bureau, is working for a revival of the aerial loan question which was pigeon-holed, in view of the difficulty of securing funds. He is said to be anxious to obtain a sum of two million dollars on the security of the aerial route between Peking and Shanghai.

BUILDINGS

A New Museum.—A donation of one million yen for the construction of an art museum in Tokyo, has been made by Mr. Keitaro Sato of Fukuoka prefecture, Kyushu.

New Railway Hospitals, Japan.—Two new railway hospitals will be built, one at Sendai and the other at Nagoya, at a cost of Y.410,000.

Reformatory for Korea.—The government general of Korea has decided to establish a reformatory for juvenile prisoners in Kaijo, Koiki province. It is to cost $250,000 and will be ready in March, 1922. The building will house 500 persons.

Erections for Customs at Swatow.—Late last year an American firm began work on a large construction contract for the maritime customs. Under construction are the examination shed, administrative building, and 14 residences for staff at a cost of about Tls. 280,000. This represents only about one-half of the work planned, the contract for the remainder having recently been obtained by the same firm. The buildings are being made of reinforced concrete. It is possible that the advantage of such construction in this region, where white ants abound and do much destruction to timber and which is occasionally visited by earthquakes, will be appreciated by the Chinese and be adopted for the better class of buildings. Several foreign-owned buildings have recently been built of reinforced concrete. Native construction is hopelessly faulty as the 1918 earthquake proved.

British Consular Buildings in China.—The house of commons has agreed to a vote of £53,515 on the acquisition of a site for the erection of a new consular building at Tientsin, and £27,000 for the erection of a new consulate and residence at Harbin.

A Girls' School at Yokosuka.—On a site recently purchased for Y.50,000 a girls art school will be constructed at Yokosuka city.

A Commercial School.—Y.130,000 have so far been subscribed for the establishment of the Yokohama Higher Commercial School.

Proposal to Build Governmental Buildings.—The beauty of the Tokyo imperial palace will be greatly damaged by the loss of the moat outside the moss-grown rampart from Wakakura gate to Sakurada gate and the construction there of imposing buildings for the government offices, planned by Doctor Okuma, technical engineer of the temporary officer of the construction of the new Diet building, reports the *Chugai Shyogo*. According to the loan proposed by the doctor the moat will be filled up for the central seat of the government offices, the city office of Tokyo and the meeting hall for citizens in Tokyo.

The paper says that the proposal has already been approved by the city planning bureau of the home department, the only objection being raised by the department of imperial household on the superstitious grounds that the moat in question is situated in the direction of "Snake and Dragon" (Southeast) of the palace. It is estimated that the plan will be completed within 10 years.

Modern Railway Hotels, China.—Another improvement in railway affairs can be recorded by the decision of the Chiaotung Pu to establish modern railway hotels, on lines similar to the Yamato Hotels on the south Manchuria railway, on several Chinese lines. On the Peking-Mukden Railway these hotels will be opened at Tientsin, Tongshan, Peitaiho and Shanhaikuan; on the Peking-Suiyuan line at Nankow, Kalgan, Tatungfu and Suiyuan; on the Peking-Hankow line at Hsiling, Chikungshan and some other stations that have not yet been selected; on the Tientsin-Pukow line at Tsinanfu, Taian, Chufu and two other stations yet to be chosen; and on the Shanghai-Nanking-Ningpo railway at Nanking West and Ningpo.

T. K. K. As Hotel Proprietors.—It is reported from Tokyo that the Toyo Kisen Kaisha contemplates spending no less than Y.20,000,000 on the construction of hotels—one at Tokyo and one at Yokohama, while the Oriental Hotel at Kobe, which is owned by the T.K.K. will probably have two or three stories added.

A Central Railway Station, Peking.—It has been decided to put into operation the plan for the construction of a central railway station near the Temple of Agriculture and the chief engineer of the Peking-Hankow Railway has been instructed to carry out the survey. The cost of construction is estimated at $3,000,000.—*Reuter.*

BRIDGES

The Yellow River Bridge.—The government has been advised by Minister Wei Chen-tsu from Brussels to the effect that the Belgian engineer who has been engaged for the Yellow River Bridge commission of the Peking-Hankow Railway cannot arrive in China in time within June, so that he suggests that the date for the opening of the tenders for the reconstruction of the said bridge should be postponed to the 31st July, 1921. This suggestion is under the consideration of the ministry of communications. It is reported that at the request of the Japanese legation, a Japanese railway engineer will be appointed to the Yellow River Bridge commission of Anglo-French-Belgian-Chinese engineers by the Chinese government.

New Bridge, Japan.—The famous Seto-noi karahasi bridge crossing Laka Biwa near Kyoto is to be rebuilt at an estimated cost of Yen 420,000. Temporary work was commenced in April.

Bridge Reconstruction, Japan.—The Sagambridge in Kanagawa prefecture will be recon-

conduct agricultural, industrial, commercial, mining and electrical pursuits. Its head office is in Shanghai.

City Planning Commission Formed, Canton.—The municipality has formed a city planning commission under the department of public works for the purpose of studying and preparing a program of city planning for the city of Canton. The commission consists of nine members with the commissioner of public works, Mr. T. K. Chong, as chairman. The other members are the three divisional chiefs and two other engineers of the public works department. Besides there are three foreign engineers invited by the mayor to become honorary members of the commission. This commission is chiefly of a technical nature. The members will meet at such times as to be announced by the chairman and they will hold meetings at the office of the public works department. Mayor Sun Fo has invited Messrs. Paget, Wier and Olivecrona, to be the honorary members of the commission. All those gentlemen are noted foreign engineers in the city. Mr. Olivecrona is the chief engineer of the Kwangtung conservancy works.

Saghalien Improvements.—In the autumn o 1920 the Japanese started making a railroad from Alexandrovsk to Onora to establish communication with Japanese Saghalien. The work is being done by Japanese workmen specially brought from Japan, and the Russians are only employed to attend to horse haulage. In the winter the Russians got remunerative employment in carting stores from Alexandrovsk to Onor, Rikovsk, Timovo, etc.

This summer the Japanese intend to set to work and alter the course of the river Alexandrovka, and after levelling the present course of the river construct on it the future town. As trade with Saghalien is free of duty, many Japanese shops have opened and are dealing chiefly in rice, flour, manufactured goods and other Japanese products, but at the same time Russian trade exists and meets with no opposition on the part of the Japanese authorities. Trading is done exclusively in yen, and no Russian money is in circulation.

Manchu-Mongol Development.—Through Sinof-Japanese co-operation, an important organization, which is called the North-Eastern Industrial Development Association, has been formed with its headquarters in Mukden and a capital of twenty million dollars. The object of the Association is to develop natural resources in Manchuria and Mongolia, for instance, the cultivation of rice and wheat, the felling and planting of trees in the Changpei and the Hsinan mountains.

The S. M. R. Co.'s Fresh Enterprises.—The sum of Y.12,000,000 has been appropriated by the South Manchuria Railway Company for the new fiscal year as the fresh enterprise funds of the local administration department. Of this amount, Y.2,600,000 is for electricity works, Y.1,300,000 for gas works, Y.3,800,000 for public works, Y.1,000,000 for hospitals and other hygienic works, and Y.2,000,000 for educational purposes.

The construction of the rest of the local hospital buildings on their site above the S.M.R. Co. general offices will be undertaken on a three years' program, and during the current fiscal year, the foundation work will be completed. Hospital buildings will be erected anew also at Wafangtien and Tashihchiao, to be finished to a major extent during this year. Of the public works in project, the chief items are the enlargement of the Antung waterworks, and the extension of the iron pipes for Antung, Fengtien (Mukden), and Changchun.

Tin and Oil Enterprise: N. E. I.—There has been a marked increase lately in the volume of emigration traffic from Hongkong to the Netherlands East Indies, where the extensive exploitation of tin and oil mines, and sugar and coffee plantations has created an unprecedentedly big demand for Chinese laborers. It has been found necessary for the purposes of recruitment of the coolies there, to come into an arrangement with the local branches of the Java-China-Japan Line, Netherlands East Indies Bank, the Holland-China Trading Company and, as the usual passport regulations have been waived for the benefit of the coolies, no difficulty has been encountered in maintaining a steady flow of emigration traffic to the Dutch colony. The number of emigrants leaving there by the J.C.J.L.'s steamer is over 1,000 every month. The majority of the coolies now proceed to the East coast of Sumatra where laborers are in great demand.

Industrial Developments: China.—In discussing industrial developments in China, Mr. Arnold notes that American machine works, electric, engineering and shipbuilding companies have opened headquarters in Shanghai and are planning to keep trained technical men at the offices. Plans for the Tsinan waterworks project are being made, and when completed the firms which have been interested will be asked to make tenders. The Chinese are reported to be seeking American participation in the development of the island of Hainan. Under date of March 12, Mr. Arnold reports that the Amoy Tinning Co. and the China Canning Co., Amoy, are planning to enlarge their plants with more extensive connections abroad. The Japanese cotton spinning industry at Tsingtao is developing very rapidly, with 50,000 spindles in operation and 200,000 more in view.

Irrigation Project at Foochow.—Consul Hanson is authority for the information that a company called "Farm Improvement and Irrigation Co." has been recently organized at Foochow, with a capital of $300,000 Mex. ($177,000 U.S. currency). It is planned to irrigate about 3,000 acres of rice paddy fields, and pumping machinery costing about $10,000 Mex. has been ordered from an American company. Electricity is to be used to operate the pumps. Fields will be irrigated by the company upon the payment of a charge of $6 Mex. per acre per year.

New Industrial Enterprises in Burma.—Vice-Consul Thorling believes that it is possible that contracts for supplies may be made available for American bidders by the new Burma Finance and Mining Co. (Ltd.). The directors of this company are prominent Britishers, most of them also directors of the Burma Corporation, which company employs a large number of American engineers and draftsmen at its mines and also procures a considerable amount of supplies for its mining operations from the United States. The Burma Finance and Mining Co. (Ltd.), organized 11 months ago, has done a good deal of exploration work in the northern and southern Shan States and in Lower Burma. Options have been acquired over two promising tin properties that are now being developed and concessions have also been applied for covering other new discoveries. The government of Burma has granted the company four concessions on the Tenasserim River covering some 10,000 acres, in which apparently important deposits of coal occur.

ELECTRICITY

Tiehling Electric Light.—A proposition has been raised among the Chinese to establish an electric light works.

New Electric Supply Works, Japan.—Electrical supplies are to be manufactured by Shoji & Company of 10 Hinode-cho, Shibauru, shiba-ku, Tokyo. Representative: Mr. S. Shoji.

The Maruzen Shokai Company was organized recently to manufacture electrical machines and tools. Office: 14 Nichome, Hama-cho, Nihonbashi-ku, Tokyo. Representative: Mr. I. Yanagisawa.

The Kyokko Electric Company was organized recently at 18 Nakanegishi-machi. Shitaya-ku, Tokyo, with Mr. T. Masuda as representative, for the purpose of engaging in the electricity business.

A Business in Electrical Supplies, Japan.—Establishing themselves at 18 Nakanegishi-machi, Shitaya-ku, Tokyo, with Mr. T. Masuda as representative, the Kyokko Electric Company will conduct a business in electrical supplies.

New Electrical Dealers, Japan.—As sellers of general electrical apparatus the firm Shoji & Company has been established at 10 Hirode-cho, Shibaura, Shiba-ku, Tokyo, with Mr. S. Shoji as representative.

Electrical Supplies, Japan.—To conduct a general electric business the Fuji Electric Company whose capital is Y.100,000, quarter paid up, has established itself at 3 Ura Sarugaku-cho, Kanda-ku, Tokyo, with Mr. E. Yamakawa as manager.

A Penang Scheme.—An electrical engineer at Penang has evolved a scheme of railless electric traction in order to solve the transport problem. He has submitted the scheme to the municipal commissioners.

The Asahi Electric Industrial Co., Osaka, Japan.—This company was organized recently at Sanchome, Horiye-shita, Nishi-ku, Osaka, to do a general business in electrical apparatus.

Urai Electric Manufacturing Co., Ltd.—Organized with a capital of Yen 500,000, quarter paid up, to manufacture general electrical machines and accessories. Office, 391 Minami Urai, Sagisu-gun, Nishinari, Osaka. Manager: K. Kishira.

New Hydro-Electric Plant, Japan.—The imperial railway department is planning to construct a great hydro-electric plant at Niiagata prefecture using the water power of the Shinano River. The plant will have a capacity of 84,000 kilowatts and will operate a section of 200 miles of line. It is expected to be in operation in 1926.

New Electric Plant, Jagna, P.I.—The Philippine legislature has granted a franchise to the municipality of Jagna, province of Bohol, to install, operate and maintain, etc., an electric light, heat and power system.

New Electric Enterprise, Taiwan.—The Taiwan Electrical and Industrial Co. (Ltd.) was organized in April, 1921, with a paid-up capital of Yen 6,000,000. The company is to supply power from its hydro-electric plant at Giran to the Taiwan Electric Power Co., which has the sole right of power and light distribution in Taiwan. Later it is to undertake the production of cement, lumber, pulp and other commodities to the manufacture of which electricity may readily be applied.

Huge Electric Project, Japan.—Mr. Z. Yasuda, H. Okawa, S. Wakao, and S. Asano are planning to organize a new electric company to be known as the Tokyo Denryoku Company. The capital which was originally set at Yen 50,000,000 is to be raised to Yen 100,000,000. The basis of this new company is the amalgamation of the Kanto Hydro-Electric Company, Capital Yen 17,000,000, managed by the Asano interests, the Abuluma Hydro-Electric Company, capital Yen 10,000,000 and the Yokiwa Hydro-Electric Company, capital Yen 10,000,000.

To Work Plant by Electricity.—It is reported in the iron trade that the Government Steel Works at Yawata is contemplating the plan of electrifying its plants by degrees for the purpose of saving labor and expenses.

New Plant in Philippines.—An act authorizing the municipality of Naga, province of Camarines Sur, to acquire and operate an electric plant within its territory and form a corporation, if necessary, and for other purposes, has been approved.

140 weaving mills with 8,400 machines in operation producing an aggregate total of $16,000,000 worth of satin annually. Besides the chief domestic market of Peking, Tientsin, Canton, Hankow, Shanghai, and Yangtze River points, the satin is finding its way into foreign countries.

Chino-American Engineering Corporation.—The Chinese Engineering and Development Company of Peking has filed articles of incorporation in the United States Court for China here.

The new company is incorporated to engage in general engineering and contracting for building construction and for the production of building materials, its capitalization is G.$100,000 divided into 1,000 shares of a par value of $100 each. It is to begin activities with paid in capital G.$10,000.

The incorporators are: Messrs. S. C. Thomas Sze, Yang Pro-ling and H. A. Raider of Tientsin, Murray Sullivan and Thaddeus C. White of Peking and C. L. Seitz of Shanghai.

New Industrial Enterprises in Shanghai.—Dr. C. T. Wang and Mr. C. C. Nieh, Chinese cotton magnate, are undertaking to organize a dye staff company at a total capital of $1,000,000 with an American dye stuff company named Heng Sin in Chinese as a joint limited corporation. At the beginning four-tenths of the total capitalization will be paid up. which is to be subscribed by Chinese and American capitalists in equal shares.

A New Filature under Organization, Chekiang.—A model filature, capitalized at $500,000, is being established in Chekiang. Possibly it will be situated at Hangchow, capital city of Chekiang province. An amount of $50,000 has been subscribed by the military governor of Chekiang, Gen. Lu Yung-hsiang, and $150,000 has been subscribed by the local influential personages.

A New Company, Kashing.—A socks and stockings manufacturing company has been lately established at Kashing, Kiangsu, at a capital of $2,000 by Mr. C. C. Loh and Mr. Y. F. Chang.

Soya Bean Oil for Export: Mills.—Consul Jenkins at Harbin reports that a Chinese manufacturer of soya bean-oil is anxious to get in touch with American oil importers through him, hoping to bring the leading Chinese oil crushers into an export association, with the object of shipping direct to consumers in the United States. There are 32 bean-oil mills in Harbin, with an approximate total of 1,900 presses. Most of the soya bean-oil from Manchuria now reaches the United States by way of other countries.

COMMERCIAL FINANCE

Industrial Investments, Japan.—The Takatus Trust Company, Ltd. recently organized with a capital of Y.2,000,000 at 1 Setomono-cho, Nihon bashi-bu, Tokyo, with Mr. R. Takatsu as managing-director, will make investments in general enterprises.

New Chinese Trust Co., Shanghai.—The first Chinese trust company capitalized at $8,000,000, is being established by the prominent merchants of Peking, Tientsin, Shanghai and Hankow, Messrs. Sun Mo-han, Ha Han-chong, Li Sung-ching, Li Yung-shu, Chu Pao-san, Yu Yat-ching, Wen Lai-ting and Chow Pei-cheng, at Shanghai. The total capitalization is divided into 160,000 shares and will be paid of which one-fourth has been paid-up.

New Bank for Peking.—A new Sino-Japanese bank, called the Tatung Bank, is to be inaugurated. Ho Hai-min, Lin Jui-teng, Ho Teh-lin and Lin Shih-chen are representing the Chinese capitalists, and the total capital paid up is $5,000,000.

Restrictions on Foreign Capital.—For the purpose of preventing disputes with foreign governments, the Peking government has just wired to all the provinces stating that without previous official sanction, no Chinese shall be permitted to use foreign money for the establishment of telephone and electric light companies.

A Trust Co., Shanghai.—A Chinese trust company to be capitalized at $10,000,000 is being organized at Shanghai by local influential merchants under the leadership of Mr. Yo Cheng-pao.

A Large Corporation Organized by China's Political Potentates.—The three high military commissioner, Gen. Chang Tso-ling, Gen. Tsao Kun and Gen. Wang Chuen-yuen are planing to organize an industrial corporation at a total capital of $10,000,000, at Tientsin, to take up the work of opening the mineral resources of Chili province.

Peking Starts New Sino-Japanese Bank—The Tatung Bank, a new Sino-Japanese banking enterprise, with a capital of five million yen, was opened recently at No. 58 Tamochang outside Chienman, Peking. The board of directors consists of the following:—

President: Mr. Lin Sui-shen.
Vice-President: Mr. Ho Hsi-ming.
Managing Director: Mr. K. Koide.
Manager: Mr. Lin Jeh-teen.

Kyoshin Bank, Japan.—The Yokosuka Commercial Bank and the Kawasaki Kyoritsu Bank, have amalgamated under the name of the Kyoshin Bank, with head office in Yokosuka and 19 branches throughout Japan. Mr. K. Hashikawa has been made managing-director.

New Banks, Peking.—The flotation of the Sino, French Chen-yeh Industrial Bank has been completed and its formal inauguration will take place on the 25th instant at the Culty chambers in the legation quarters. In addition to this bank, another big bank called the Chung-nan Bank, or Central China Bank with a capital of ten million dollars, with its headquarters in Shanghai, has been officially registered in the ministry of finance and its chief promoters are wealthy Chinese emigrants from Singapore, Hongkong and other foreign colonies.—*Asiatic News Agency.*

Report of New Banks.—A new bank, capitalized at a total amount of $10,000,000 with $2,500,000 paid-up, was opened on May 28th, 1921 at Peking. This bank is named Tseng Nih, and its managers and sub-managers are Messrs. N. C. Woo and C. C. Hu.

A new bank, capitalized at $1,000,000, is being organized at Soochow, Kiangsu, by the local pawnshop keepers. Mr. Chen So-kiang, manager of Bank of Communications at Hangchow, will be manager of this bank.

New Bank, Shanghai.—A new bank capitalized at $2,000,000 was opened at Shanghai on May 31st, 1921. This bank is named Ming Hua, and its head office is at Peking.

Three more banks are being organized. One is named Chung Nan, capitalized at a total amount of $20,000,000, and to be paid up with $5,000,000 at the outset; one is named Sin Tung, capitalized at $500,000; and the third one is promoted by the local cotton merchants being under preliminary preparation.

A New Bank, Tientsin.—A branch of the Industrial Development Bank of China was opened on May 26th, 1921.

A New Bank, Amoy—An agricultural bank has been lately established at Amoy, Fukien. The total capital of the new bank is $100,000, and the general manager is the City Magistrate Mr. Lai Yu-ling.

Bank Amalgamation, Japan.—The Yasuda Bank has made a contract with the Kanagawa Bank, Aokicho, Kanagawa, for its purchase and amalgamation. The Kanagawa Bank will be converted into a branch office of the Yasuda Bank in a few days when the contract is formally announced.

Chung Hua Trust Company.—The first one of its kind in Shanghai, planned by Dr. P. Y. Wang, Chinese delegate to the international red cross conference last year, after his investigation tour in Europe and America, and promoted by many influential personages of Peking, Tientsin, Ningpo and Shanghai, capitalized at $10,000,000, the chiefs of the preparation committee for the organization of the company are Messrs. Yao Molien and Koo Shing-yih, leading merchants of Shanghai.

GOVERNMENT FINANCE

Harbin-Heiho Railway.—The Manchurian authorities have promised the government that the Manchurian provinces will raise a fund to meet the expenses of the construction of the Harbin-Heiho railway so that there will be no necessity for a foreign loan.

A Loan for the China Eastern Railway.—The ministry of communications is negotiating with the Bank of China and the Bank of Communications for a loan of $2,000,000 to support the Chinese Eastern Railway. The loan will be guaranteed by the government with the revenue of the railway as security.

The New Loan in the F. M. S.—It is understood that about $7½ millions have been subscribed to the $20 million loan.

New Bond Issue Planned: China.—It is learned that Chang Chih-tan, minister of communications, is making preparation for the issuance of $10,000,000 worth of the Special Treasury Promisory Notes to meet the urgent need of the Government. He points out that $5,000,000 worth issued by Mr. Yeh Kung-cho were taken up by the Bankers in several days, there would be little difficulty in selling $10,000,000 if reliable sources of security is offered.—*Jih Pao.*

Loan to Develop Java.—The Dutch second chamber has adopted a bill authorizing the government to raise a loan of 250,000,000 florins at an interest rate of 7 per cent. for the development of the Dutch East Indies.

MINING

Chihli's Mining Resources.—So much opposition among Chinese and foreign investors has arisen since announcement of the formation of the Chihli Construction Syndicate that the government ordered the ministry of agriculture and commerce to cancel the grant of a charter given by the civil governor of Chihli. The new enterprise, which had the civil governor's backing, proposed to monopolize the mining resources of Chihli, which were only recently turned over by the government to the Chihli provincial government.

Stone Quarrying, Japan.—The Mogi Stone Co., Ltd. was organized recently with a capital of Y.250,000, quarter paid up, to quarry and sell stone. Their office is at 2 Kamakura-cho, Kanda-ku, Tokyo, and K. Okazawa is the manager.

Chuhsien Coal Mine.—A rich coal mine is reported to have been discovered in the neighborhood of Yi Shan, near Chuhsien in Shantung province. The coal has been tested and is said to be of a high quality. A company of merchants has been organized with a capitalization of $500,000 for its development.

Siberia Gold Mines.—The Ordoi gold mines, situated to the west of Blagovieschtchensk, have been leased for a lengthy period to American interests. Negotiations are in progress for the grant of further concessions in the Amur district.

Asa Coal Mining Company, Ltd.—Organized with a capital of Yen 500,000, fully paid up, to operate coal mines in Yamaguchi prefecture. Office: Asa-machi, Asa-gun, Yamaguchi prefecture. Managing Director: Y. Yoshino.

Motor Road in Canton.—A motor road to the famous Loh Fo Hills is projected by a supervisor of the maritime customs administration at Canton, says the *Hongkong Daily Press*. His suggestion is that it should start from Wang Ka Shan, immediately opposite the city of Shek-lung. The local authorities are said to favor the project. It is estimated that the road will cost $150,000 to construct.

The Tokaido road construction plan was put into effect recently with the commencement of the Namamugi to Rakugo road, a distance of four miles. The plan involves Y.2,800,000.

RIVER, HARBORS, WHARVES AND DOCKS

Manila Port Improvements.—The proposed port improvements of Manila, calling for an expenditure of more than 100,000 pesos will soon come up for serious consideration by the United States government, according to information recently given out by the governor-general's office.

It is stated that a commission, composed of representatives of the American war, navy, commerce and state departments, the United States shipping board, and a delegate from the Philippine government, will be assembled in Washington to settle the question of making Manila the American trade base in the Far East through the construction of additional docks and breakwaters.

Conservancy Works in Anhuei.—The dredging of the Chu-hu River, which flows for about 80 miles through northern Anhuei, has been finished at an aggregated cost of more than $6,000,000, under the supervision of the Pengpu conservancy works. Similar work is to be undertaken on the Wei River, the main waterway of Anhuei, by the same board.

Tai Hu Lake Conservancy.—For the conservancy works of the Tai Hu lake a sum of $300,000 has been allocated to Kiangsu and $200,000 to Chekiang by the Peking government. The work is being carried on by the Tai-hu Lake conservancy board under the directorship of Mr. Wang Tsingmo. As recommended by Mr. Heidenstam, engineer-in-chief of the Whangpoo conservancy board, a small dredging machine at a cost of about $240,000 will be purchased.

Singapore River Improvements.—Messrs. Coode Matthews, Fitzmaurice and Wilson, have reported to the Straits government, on "Singapore River Improvements." This was reported on by the same firm in 1901 and in 1906, and the chamber of commerce again brought up the subject in 1919. Hence this further report. As engineers, the firm had to supply a scheme, if it were decided to "improve" the river, and they submit a $15,000,000 plan for building concrete walls on either side, with the raising of the bridges and the strengthening of the abutments. But they are not enthusiastic about it, indeed they damn it with faint praise.

The *Free Press*, commenting on the report, says :—"The Government certainly has no money to spend on a large work of any kind at present, but it would certainly be a mistake to listen to the demands of those who (as a secondary consideration, perhaps) have an eye to the increase in the value of their river shore property, and to support a scheme which, as we read it, stands condemned in the eyes of the firm who make the report referred to."

Rival to Tsingtao.—The latest report concerning the port of Haichow, Shantung, which may be regarded as something of a rival port to Tsingtao, is that reconstruction of the harbor has been decided on by the Peking government, and that a director of the Haichow harbor works office has been appointed in connection with the scheme.

Hulutao, a Commercial Seaport.—The cost of constructing the harbor and other important works for the development of Hulutao, Chihli, as a commercial seaport is estimated at over $3.000.000.

Conservancy Works in Northern Kiangsu.—The Chuen-yang river is an important waterway in northern Kiangsu, but as it has not been repaired for many years it is in a congested condition. Mr. Chang Chien, director of the conservancy bureau of the Grand Canal, has obtained the consent of the central government to dredge the Chuen-yang river. A new waterway will be dug, lengthening the old river from Cho-shia to Kwuan-yung, the northern coast city of Kiangsu, a distance of about 471 *li*. The work is estimated to cost $3,000,000 in all.

Port Improvements at Tsingtao.—Vice-Consul Norwood F. Allman reports from Tsingtao, China, that, according to a statement of the director of the wharves in Tsingtao, the Japanese government has authorized the expenditure of Y.1,000,000 toward the improvement of the Tsingtao wharves, at present greatly overtaxed. This sum will be expended over a period of three years.

Manila Port Improvements.—The proposed port improvements of Manila, calling for an expenditure of more than $100,000 will come up for serious consideration by the United States government, according to information recently given out by the governor-general's office there.

It is stated that a commission composed of representatives of the American war, navy, commerce and state departments, the United States shipping board, and a delegate from the Philippine government, will be assembled in Washington to settle the question of making Manila the American trade base in the Far East, through the construction of additional docks and breakwaters.

Ramon Fernandez, mayor of Manila, is considered the probable representative of the Philippine government.—*Reuter.*

Bombay Reclamation Project.—In regard to the back bay reclamation scheme of Bombay, the Indian and eastern engineer states that the area to be reclaimed is 1,145 acres, which will be enclosed by a wall 4 miles long, built of stone and concrete. A notable feature of the project is the method by which the actual reclamation will be effected. The total amount of filling required is 27,000,000 cubic yards, or a space 5 miles long, 1,000 yards broad, and 9 feet high. Material will be obtained by dredging the harbor on the east side of Colaba Peninsula and pumping the material through pipe lines across the peninsula into the bay. The quantity of clay filling required is 25,000,000 cubic yards, the remainder, 2,000,000 cubic yards, to consist of topping and hard moorum. It is estimated that the reclamation of 4,000,000 square yards will require an expenditure of £4,000,000, or an approximate cost of £1 per square yard. It is expected that the work will require seven years.

The Harbors of Yokohama, Shimonoseki, Naha and Shimizu will be reconstructed at costs as follows :

Yokohama Y.8,237,000, work to be done between 1921 and 1930.

Shimonoseki, Y.3,610,000, work to be completed by 1927.

Nara, Y.1,500,000, work to be finished by 1925.

Shimizu, Y.5,500,000. This harbor will be dredged to anchor 20,000-ton steamers.

Tachingho Harbor Construction.—With reference to the proposed organization of the Chihli Construction Corporation and the strong opposition of another section of the Chihli people to same, the secretariat of the cabinet has officially written to the ministries of foreign affairs, of the interior, of agriculture and commerce and of communications stating that in order to avoid enquiries or protests from Japan and Britain and possibly other powers, the greatest attention should be paid to the petition of Chihli authorities for the sanction of the scheme relating to the construction of a new port and harbor in the vicinity of the Tachingho river with policing rights because it will be the rival of Tientsin. The question cannot be decided in the near future because the supporting and opposing petitioners are leaders of equally powerful factions in Chihli, while the latter is also supported by Chihli residents in Shanghai and other provinces. The opponents charge the Chinese promoters of the corporation as second Anfu men who used to bargain away the birthrights of the Chinese people to foreigners chiefly for their own private interests when they were in power.

RAILWAYS

A Railway Loan.—The ministry of communications has negotiated with a British syndicate for a loan for construction of a double-track railway line between Tangshan and Shanhaikuan. The locomotives and equipment of the Peking-Mukden line are being offered as security. The loan agreement has been signed.

The Kirin-Huaining Railway.—Mr. Ono, the vice-president of the Industrial Bank of Japan, who came to Peking to attend the annual meeting of shareholders of the Exchange Bank of China, of which the Industrial Bank of Japan are the principal shareholders, has been negotiating with the ministry of communications over the final stages of the loan for the construction of the Kirin-Huaining Railway. The preliminary agreement was entered into by Mr. Tsao Yu-lin with Japanese interests during Tuan Chi-jui's premiership. It is semi-officially stated that the final agreement has been signed. The railway will run from Kirin through Yenchi and across the Tumen River into Korea.

It is understood that Mr. Ono will also approach the Chinese government regarding the repayment of Japanese loans contracted by the Anfuite administration. It is stated that neither principal nor interest on these loans has been met.

The ministry of communications has sent experts to survey the Tsangchow-Shihchiachuang railway with a view to the establishment of a telegraph line.

Kin-Sui Railway Extension.—For the construction of the Suiyuan-Paotou section of the Peking-Suiyuan railway, an agreement has been signed by the railway administration with the Japanese Asiatic Industrial Development Company for a loan of three million dollars. The security for the loan is four million dollars treasury bonds. It is a short-term loan whose proceeds will be solely used for constructional purposes. It has nothing to do with the new consortium because the loan is a local and short-term agreement.

New Railway Companies, Japan.—The Japanese railway department has received applications up to the end of February, 1921, from 98 companies for franchise totalling 1,961 miles of new lines.

Many of these will be rejected, but others, whose names follow, will receive permission :—

	miles
HOKKAIDO.	
Hidaka Colonial Tramway Company ...	91.75
Uraho Mining Tramway	11.36
NORTHEAST JAPAN.	
Kashiwazaki Tramway Company	23.10
Kariwa Tramway Company	22.00
Senyama Tramway Company	13.00
CENTRAL JAPAN.	
Nippon Electric Tramway Company ...	296.30
Konan Electric Tramway Company ...	47.20
Nagoya Electric Tramway Company ...	39.63
Tenryu Electric Tramway Company ...	26.09
Tenryu Hydro Electric Tramway Company	33.25
Chita Electric Tramway Company	32.42
Sakawa Electric Tramway Company ...	39.00
WESTERN JAPAN.	
Ungei Tramway Company	55.40
Chunan Tramway Company	53.70
Geinan Tramway Company	47.28
Imari Tramway Company	12.00
Awa Electric Industry Tramway Company...	46.11

Peking-Suiyuan Railway Fengcheng Branch.—The Peking-Suiyuan railway has now announced

that the extension from Fengcheng to Suiyuan is entirely open to both passenger and freight traffic.

Work Recommenced.—The construction of the Chuchow-Chuping section of the Canton-Hankow Railway was begun on May 1, as the result of the decision of the government in January last to set aside a portion of the revenues of the Peking-Hankow and other railways for that purpose.

Kirin-Huaining Railway.—The Japanese legation states that the final contract for the Kirin-Huaining Railway Loan has not yet been signed.

Elevated Railway, Tokyo.—The Tokyo *Maiyu* says that the plans for the construction of the elevated railway between Uyeno and Manseibashi station are progressing and that the line will be completed in 1923. It will connect the north entrance of the city with Tokyo Station. An area of ground, comprising about 13,000 *tsubo*, has been purchased along the proposed line, and the tenants, numbering 550 families, have been instructed to vacate by September. The construction work is to cost Y.4,500,000, it is said.

The Peking-Suiyuan Extension.—The completion of the Peking-Suiyuan Railway, a line about four hundred and sixteen miles in length, has been announced by the Peking-Suiyuan Railway Administration. The railway authorities have decided that through traffic between Peking and Suiyuan will be formally opened on May first. Construction work of the extension from Suiyuan to Paotouchen will be commenced before long, as a surveying party under an engineer, Mr. Chow, has already been sent out.

Peking-Suiyuan Loan.—It is reported from Peking that an agreement has been signed with the Japanese Asiatic Development Company for a loan of $3,000,000 in connection with the construction of the Peking-Suiyuan Railway. The loan is said to have nothing to do with the new consortium, being only a local and short tern agreement.

New Railways in the D.E.I.—There is undoubtedly going to be a great expansion throughout these islands in new railroad systems, involving many millions of guilders.

According to all accounts there ought to be plenty of orders to go round without any undue monopolizing, and we have little doubt but that, Dutch, British, American, German, and one or two others will be engaged in this stupendous task which will occupy a year at least.

U. S. A. or German Locomotives.—In connection with the order obtained by a German firm for rolling stock for Java, it is stated in the New York Press that an American manufacturer's bids of $63,000 and $60,500 for two types of locomotives compared with German tenders of $25,000 and $22,000 respectively.

Canton-Hankow Railway New Cars.—The Wuchang-Changsha section of the Canton-Hankow Railway has received a new shipment of 45 cars from England which will relieve the present congestion of goods traffic. For the Chu-Keng section of this railway between Hunan and Hupeh, the Chiaotungpa has called upon the Peking Mukden Railway, the Peking-Suiyuan Railway, the Peking-Hankow Railway and the Tientsin-Pukow Railway each to contribute a monthly sum of $400,000 for defraying the cost of the new engineering work undertaken for the section in question. Engineer-in-Chief Cox has recommended the engagement of two additional British engineers to look after the construction of bridges and sub-way in the Southern section of Canton-Hankow Railway.

Southern Section Canton-Hankow Railway.—Again it is announced that work upon the southern section of the Canton-Hankow Railway will be continued, and that a sum of $120,000 for this purpose will be provided by the Peking-Hankow, Tientsin-Pukow and Peking-Fengtien railways to commence with, while it is further hoped to raise an annual amount of about $5,750,000 until the line is completed.

Double Track to Tiehling.—The South Manchuria Railway has been building a double track line to Tiehling. This line is about to be completed soon.

New Railway Started.—Construction work on the branch line of the Peking-Mukden railway from Chinchow to Chowyang is now in full swing. Work was commenced in April, and the section between Chinchow and Yichow will probably be completed by the end of the year. The Yichow-Chowyang section will be commenced at the beginning of next year.

Loan for P. M. Railway.—For the building of the Dahushan-Heishan branch of Peking-Mukden railway, an amount of $300,000 was borrowed from Ming Yih Coal Mining Company.

The Chefoo-Weihsien Railway.—The technical department of the Chefoo-Weihsien railway bureau reports that road-bed has been completed, and asks for instructions regarding the laying of the rails. The department points out that the railway is urgently needed to develop economic and industrial interests in the region.—*Reuter.*

New Chinese Railway Company.—Three principal points of interest in regard to the construction of a railway from Canton to Hoiping, Kwangtung province, by a Chinese syndicate, are that the railway is primarily a commercial enterprise, that it will have a total mileage of 210 *li*, or 70 English miles, and that it will traverse some of the richest silk and tobacco producing regions of the province.

Kirin-Tehui Railway.—The construction work of railway between Kirin and Tehui was to have been put in hand early this month, but has been obliged to be put off owing to the shortage of construction materials.

Ssupingkai-Taonan Line.—Work on the construction of the 70-mile extension from Chengchiatun to Paiyintala on the Ssupingkai-Taonan Line of the Chinese Government Railways was started on the return of spring, and has progressed with almost incredible despatch. The whole work promises to be finished before the advent of winter next November. The remarkable quickness of the work is owing to the level stretch of the country, through which the extension runs.

The Nagoya Electric Railway Company has been granted permission by the minister of railways to lay a new line between Inuyama, Aichi prefecture, and Seki Gifu prefecture, 10.35 miles in length.

British and Chinese Corpn. Loan.—The cabinet recently passed a loan agreement with the British and Chinese Corporation, Ltd., for turning into a double track the distance between Tangshan and Shanhaikuan on the Peking-Mukden Railway.

Chuchow-Chuping Rail Work Started.—The construction of the Chuchow-Chuping section of the Canton-Hankow railway was begun on May 1, as the result of the decision of the government in January last to set aside a portion of the revenues of the Peking-Hankow and other railways for that purpose. The delay was caused by these revenues being used for other and more pressing purposes.

A Chinese Railway Deal.—The following is the outline of the agreement recently concluded between the communications department and the British and Chinese Corporation, Ltd., in connection with the establishment of a double track between Shanhaikuan and Tangshan on the Peking-Mukden Line :—

1.—The contracted loan to be £500,000 sterling.
2.—The sum of $166,660 to be delivered monthly to the Peking-Mukden Railway bureau by the Hongkong and Shanghai Banking Corporation, beginning on May 17 of the present year.
3.—Interest to be 8 per cent.
4.—The commission to be 1.5 per cent.
5.—The profit of the Peking-Mukden Railway to be appropriated as security.
6.—Repayment of the principal and interest to start from June of next year.

Heiho-Harbin Railway to be Built.—The scheme for the construction of the railway line from Heiho to Harbin which has been under consideration for some time, is now decided upon by the Heilungkiang provincial assembly who will raise the necessary capital, amounting to $6,000,000 by subscription in the form of debentures. The work of construction is to be begun in the Spring.—*Chen Pao.*

A New Railway Line.—Japanese interests have approached the government with regard to the construction of a railway line from Tienpaoshan to the Tumen River. The matters is now under the consideration of the ministry of communications.—*Reuter.*

Railroad Construction: Saghalien.—As early as the autumn of last year the Japanese started making a railroad from Alexandrovsk to Onora to establish communication with Japanese Saghalien. The work is being done by Japanese workmen specially brought from Japan, and the Russians are only employed to attend to horse haulage. In the winter the Russians got remunerative employment in carting stores from Alexandrovsk to Onor, Rikovsk, Timovo, etc.

New Elevated to Cost Y.4,500,000: Japan.—The plans are now complete, says the Tokyo *Maiyu*, for the construction of the elevated railway between Uyeno and Manseibashi Station, to connect the north entrance of the capital with the Central Tokyo Station.

For this purpose a tract of land along the proposed railway line covering an area of 13,000 *tsubo* has already been purchased and the tenants numbering 550 will evacuate their houses within the district by September.

The construction work, it is estimated, will cost Y.4,500,000 and will be completed the year after next.

Proposed New Road.—The director of the Shanghai-Nanking Railway has suggested construction of a double line between Pennin and Tanyang. Construction to commence in June next.

New Railway, Saghalien.—A new railway line between Sakaihama and Shikika, a distance of 150 miles, will be built by a newly organized company at Karafuto, Saghalien, for which purpose Y.10,000,000 will be subscribed, half by the promoters and the other half by the public.

SHIPPING

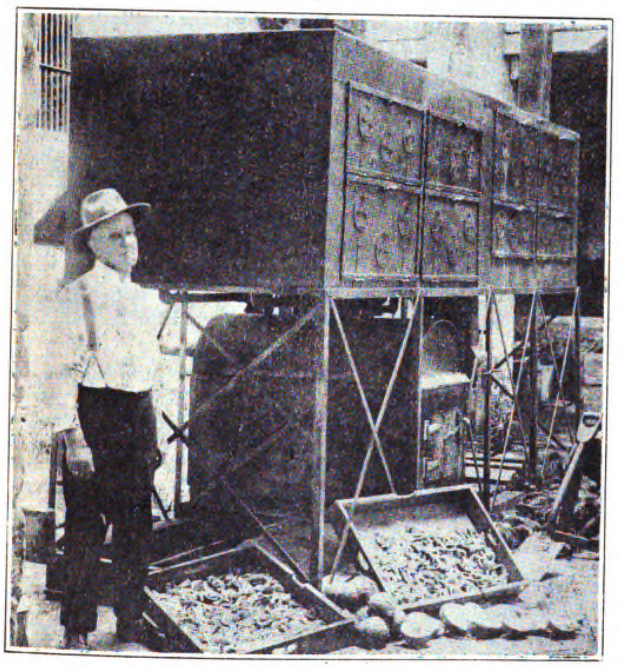
Sino-Belgian Navigation Plans.—The proposal for the starting of a steamship navigation service between China and Belgium has been under consideration for some time, and it is now learned that the waichiaopu and the Belgian legation have lately been in close consultation on this problem. Definite plans and regulations for the new service have been drawn up. The service will maintain two separate navigation routes, six, from Shanghai and Hongkong to Belgium via Singapore, Bombay and Mediterranean Sea, and from Shanghai eastward to Japan, Panama Canal, New York and Liverpool to Belgium. The charter will be registered shortly, and capital for the enterprise has been raised. — *Minkuo News Agency.*

Chinese Ocean-Going Vessels.—A Chung Hua Navigation Co., Ltd. has been lately organized at the capital of Chile by the Chinese residents at South America with a total capital of $4,000,000. The new company will operate steamers on the Hongkong-Chile run via Shanghai, Honolulu, Mexican, Panama and Peru, and the Hongkong-New York run via Shanghai, Honolulu,

sary crosswise connections. The iron flues are 30 centimetres in diameter, made locally from sheets. The ends project beyond the walls, and can be opened when the pipes need cleaning. The last flue ends in a chimney 12 metres high. The course of the smoke is indicated by arrows.

The drying room proper is directly over the heating room and very little larger, and the floor between them is merely a grating. In operation the drying room is filled with trays of copra, each holding about three kilos. Different driers have capacity of 200 to 394 trays. The local custom is said to be to remove the copra from the shell without any preliminary drying, which is laborious and inevitably involves breaking it into small pieces. Assuming a yield of 2 tons a year per hectare, a drier then will take care of the yield of 150 hectares. How large an area can well be made tributary to one drier depends of course on the means and cost of transporting the nuts as well as on other local conditions.

In German New Guinea and the Bismarck Archipelago a drier is built for each hectare. Preuss states that one of them will dry 1,700 pounds of copra in 24 hours or 300 tons a year. The temperature is kept near 50° C. When the copra is taken from the drying chamber it is spread over the floor of the building to cool and to dry a little more perfectly. Unless the drying is finished in this way the copra is said to mold; but with proper treatment the product is of excellent quality. One of these drying houses costs P.3,000 to P.3,500.



McChesney's Hot-air Copra Drier

Steam Drier.—Some time ago the bureau of agriculture introduced a drier containing a series of 2-inch (50-millimetre) tubes, placed near the bottom, through which the steam for drying the copra was introduced. The grade of copra produced by this apparatus was very good and it was found that perfect control could be had in the manipulation of the drier. The steam in this case was produced from the husks and shells of the coconuts under an ordinary boiler.

Another drier has been in use in Laguna province which aims at a better distribution of the heat by having its steam pipes arranged through the apparatus at various heights instead of at the bottom only.

The Mayfarth Drier.—This apparatus is built on distinctly different plans from the above. A blast of hot air furnishes the heating medium, and the partly dried nuts are moved along during the drying by means of a mechanical arrangement propelled by an operator. This apparatus was subjected to extensive experiments by the Compaixa Tabacalera of Manila.

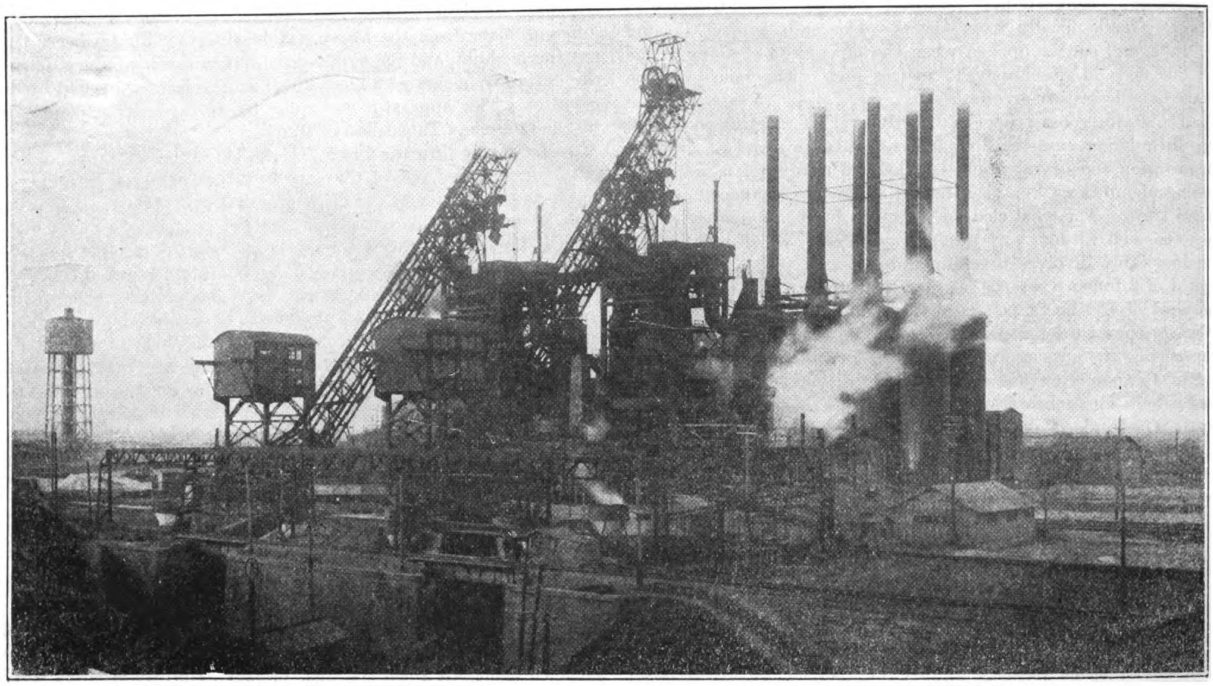
McChesney's Hot-air Copra Drier.—This represents one of the latest designs and one of the very best that has been introduced, so far as the quality of the dried product is concerned. The principle upon which this operates is that air heated in a metal oven placed above the furnace is forced through a series of pipes containing perforations, and thus an air pressure is maintained in the oven itself until a certain amount of the water has been removed. The broken nuts are placed in trays and left to dry for about one hour at a temperature of 90° or 95° after which the shells may be easily removed and the meat cut into strips, which are again placed in trays and dried for about three hours. The temperature during this time is maintained as high as possible without causing decomposition of the tissue, which will result from excessive heat. About three or four hours of this second drying is usually sufficient to produce a first-class copra.

Proper Method of Drying

When the drying is first begun the temperature may be allowed to reach 95° or even 98° until the nuts are ready to be removed from the shell, after which about 85° should be the maximum temperature for the first hour and then a gradual drop should obtain for the two succeeding hours until 65° is reached. Great care must be exercised when the final product is nearly secured, since at this time decomposition from heat may easily result. It is thus better to use a lower temperature and more time during the final drying. Copra dried under these conditions and properly packed should keep well and contain a minimum of fatty acid. Such copra should therefore command the highest price in foreign markets, and cost the producer probably less, or at least no more, than copra obtained by the old methods. One advantage in producing a superior article in any line is that there is always a sure and steady market for this product as well as an opportunity to secure the highest market price.

Chinese Railways

Government railways in China cover 6,410 kilometres. Provincial and private railways cover a further 773 kilometres and "concessioned" railways 3,780 kilometres. Thus the total length of the railway systems of China is 10,963 kilometres, or 6,813 miles. China has, approximately 54,000 of population per mile of railway in operation. This compares in very striking fashion with India, which has 13,000 of population per mile of railway, and in making the comparison it must be remembered that in India a wide extension of the railway system has for many years been held to be one of the essential needs of the country. On the other hand the extensive use of waterways in China will always serve to keep these railway average figures higher than in other countries. The government bureau of economic information at Peking, which draws attention to these statistics, gives at the same time a summary of the results of the working of Chinese railways in 1919 and 1918. In 1919 operating revenues at $83,047,390 showed an increase of $5,395,237, while operating expenses, at $38,440,541, were $4,117,925 higher. After deducting all charges, the true net surplus in 1919 was $36,449,392, against $33,505,120 in the previous year. The railway system now operating in China is located principally north of the Yangtze River. The Shanghai-Nanking, the Shanghai-Hangchow-Ningpo, and the Hupeh-Hunan lines extend the system into South China. Construction plans are on foot to connect up other short lines operating in the south.



Anshan Steel Works

ANSHAN IRON MINES

THE iron belt of Anshan stretches to Penchihu and holds an immense quantity. The concession held by the Chenhsing Mining Co. includes a region within a radius of 7 or 8 miles with the Anzan Iron & Steel Works as the centre. There are altogether eight mining districts—one each at the east and west of Tangkangtzu Hot Springs styled Hsiaolingtzu and Tiehshihshan. South of Chienshan Railway Station with the railway track running across, there are East Anshan and West Anshan. Takushan lies on the way to the famous Chienshan Mountains. Northeast thereof, there is Kuanmenshan. Turning northward one will come across the two more mines—Wangchiaputzu and Yingtaoyuan. In the main, they fall under the head of hematite mines, but a few of them are mixed with magnetite. Takushan mine contains a comparatively large quantity of magnetite. The same thing may be said of the edge of Wangchiaputzu. The ore bed shows its outcrops on the top of the hill. Although the prospecting work is left unfinished, which circumstance renders an accurate estimate impossible. computed on the bases of the outcrops, the average percentage of East Anshan Mine is 27 per cent.; that of West Anshan 30 per cent.: that of Takushan 37 per cent.; that of Yingtaoyuan 28 per cent.; and the others are very much the same. The past experience in mining and prospecting indicates the presence of rich ore in each mine, and if operated on a picking principle, an ore of from 40 per cent. on an average or even of 60 per cent. on an average is obtainable. Up to this date, the picking plan has been pursued in order to supply material to the Anshan Iron and Steel Works. However, rich ore exists irregularly, and is found scattered all over the district in quantities of widely varying range. Accordingly there is no depending on the sureness of supply, for the supply may be exhausted to-morrow. Above all, the rich ore occurs only in a limited amount, as may be easily imagined. Still, the poor ore as above enumerated is hardly suitable as material for the blast furnace. Especially the iron ore of Anshan is generally compact and its particles are very fine. Moreover, almost the whole of the impurity is made up of silicious stone which impedes the smelting process. This state of things would seem to put a very pessimistic complexion on the utility of the Anshan iron mine. However, it holds iron to the amount of over 100,000,000 tons, and this great treasury of nature must be opened somehow. The key to a like treasure house has already been found in the West. Poor ore of a similar quality may be subjected to a mechanical handling to get its impurities to be removed so as to make an artificial rich ore.

Ore-Concentration and Briquetting of Anshan Iron Ore

The iron ore of Anshan is required, prior to being ready as iron manufacturing material, to have its economic value improved by a dressing process. The dressing of iron ore has been developed these twenty years and is in vogue at many places in the West. The method varies according to the nature of the ores. With magnetite, its strong magnetic quality is availed of and what is called magnetic dressing is adopted. Then, with hematite and others, dressing by specific gravity is applied. What is now in most popular use is the dressing of poor magnetite ore. The dressing of hematite is found in the instance of the special class of ore occurring in the Mesaba belt, Minnesota, and outside this, it is conducted supplementarily to the magnetic dressing method.

The Anshan ore, as already stated, is composed mainly of hematite, and only part of Takushan and Wangchiaputzu mines contains magnetite. As to the Takushan ore, from both experimental tests and actual examples in foreign countries, it may be effectively handled by applying some dressing device adapted thereto, but as regards the hematite which makes up most of the ore, there is no foreign example to serve as guide. Nor has this subject been exhaustively studied.

However, three methods may be suggested, that is, (1) Dressing by specific gravity, (2) Magnetic separation, and (3) Magnetic separation after the hematite has been reduced into magnetite.

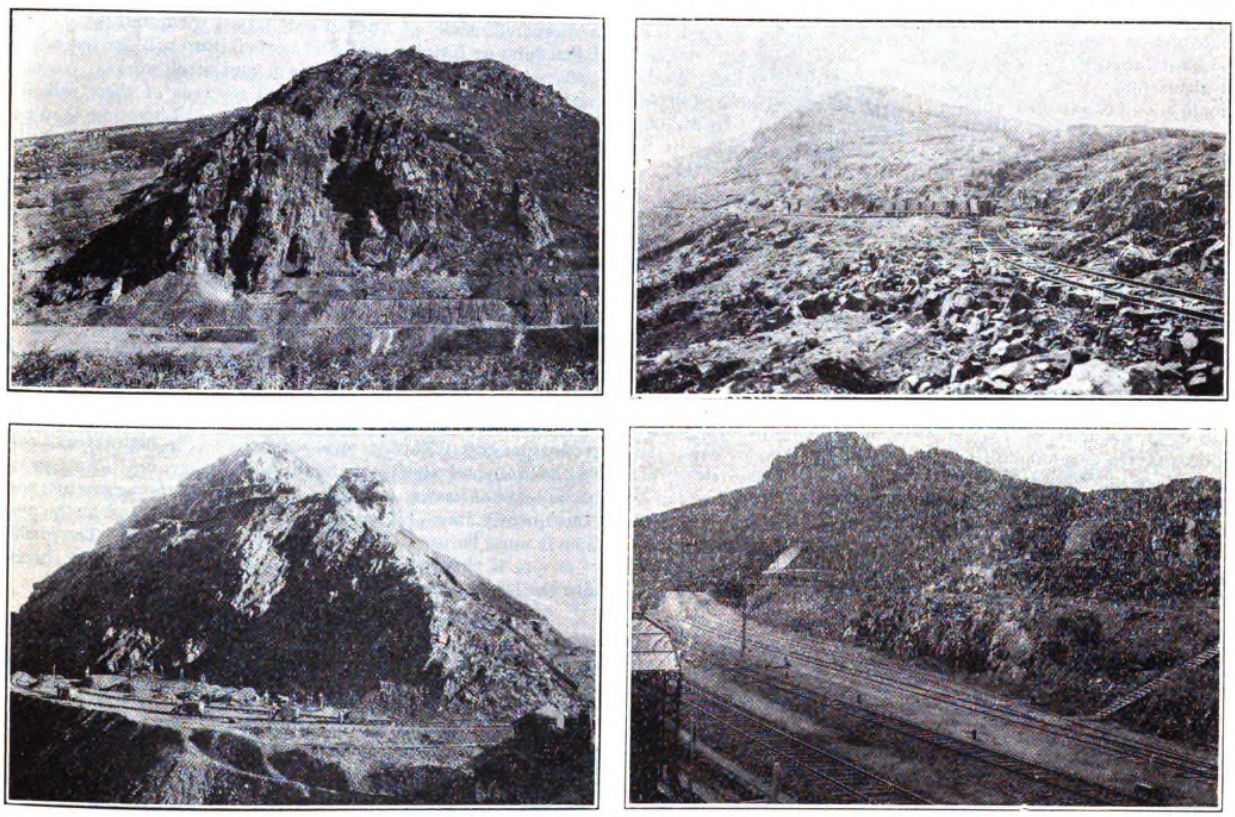
What is considered as the most promising at present is (3). The results reaped from experimenting upon this method in Sweden were exceedingly satisfactory, but for applying it to practice as a business venture, further study is required. The second method is also promising, but the need of large capital is its chief drawback. The first method is unsuited to the Anshan ore. Thus the question of dressing hematite which takes up the large portion of the Anshan ore can hardly be regarded as solved, although its solution seems only a question of time, once the method therefor has been decided upon.

The ore-dressing must be accompanied with briquetting. Ore-concentration is, in most cases, conducted by crushing the ore into a pulverized state, and for this reason, the refined ore obtainable by ore-concentration is found in the form of powder, which is unsuited to be charged into the blast furnace. It must be converted into briquets. There are two ways of making briquets. One is by the use of heat; the other is by the use of a cementing material. The former method is the more popular and has three different processes. One is nodulizing; the second is sintering; and the third is briquetting. In the nodulizing process, something like a revolving furnace used at a cement factory is used to make dust ore into briquets. In the sintering process, the rich dust ore is put in the roasting furnace, mixed with pulverized coal, coke, charcoal, etc. This mixture is then ignited and, by means of ventilation, the pulverized fuel mixed with the dust ore catches on fire and changes the dust ore into briquets. By briquetting is meant to make dust ore into the from of brick by mechanical appliances and to bake it in the furnace.

The above three methods have their own advantages and disadvantages, but sintering is believed to be the most advanced method. All the three methods are in vogue in many countries, and the only thing to be done is to choose what is believed to be the best.

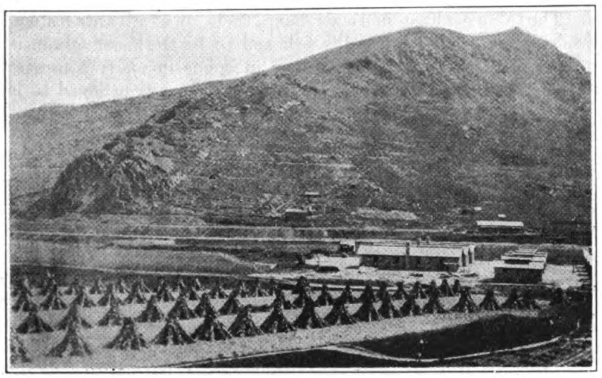
Future of Anzan Iron and Steel Works

The Anzan Iron & Steel Works was originally planned to put out 1,000,000 tons of steel a year. In the wake of the completion of the first part of the program, the second and third parts of the same program were to have been executed. But owing to sundry circumstances, the extension work lies practically suspended. For instance, the two blast furnaces have already been completed, but the steel works that ought to be attached to them has no immediate prospect of being brought into existence. What should be done with the Anzan Iron and Steel Works is a serious and interesting question which deserves careful study from divers points of view. Apart from such practical question, we shall speculate upon the future of the Iron and Steel Works on the bases of the fundamental conditions of its establishment, that is, the supply of raw materials, the markets for the products, etc. The raw materials are iron ore, cokes, lime stone, etc.

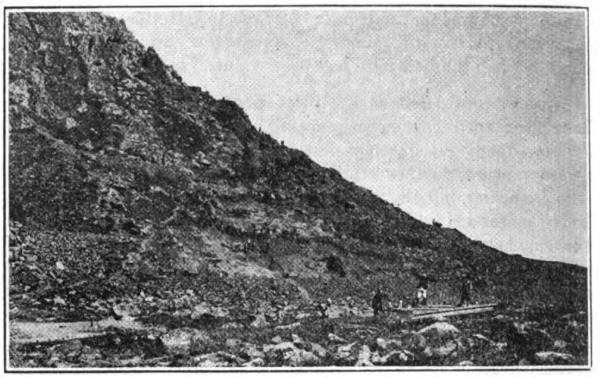


Views of the West Anshan Iron Mines, Operated by the South Manchuria Railway Company

As to iron ore, by the application to magnetite of Takushan of the ore-concentration and briquetting methods for magnetite which have been so happily and economically solved in the West, an artificial rich ore containing more than 60 per cent. of iron, which is decidedly advantageous, may be obtained. Supposing that this artificial rich ore be supplied to the two blast furnaces, a roughly estimated consumption amounts to 350,000 tons. From the estimated ore reserve of Takushan Mine, it may have sufficient to last about thirty years. If the mixture of 66 per cent. of the artificial rich ore and 33 per cent. of natural ore containing 40 per



East Anshan Iron Mines

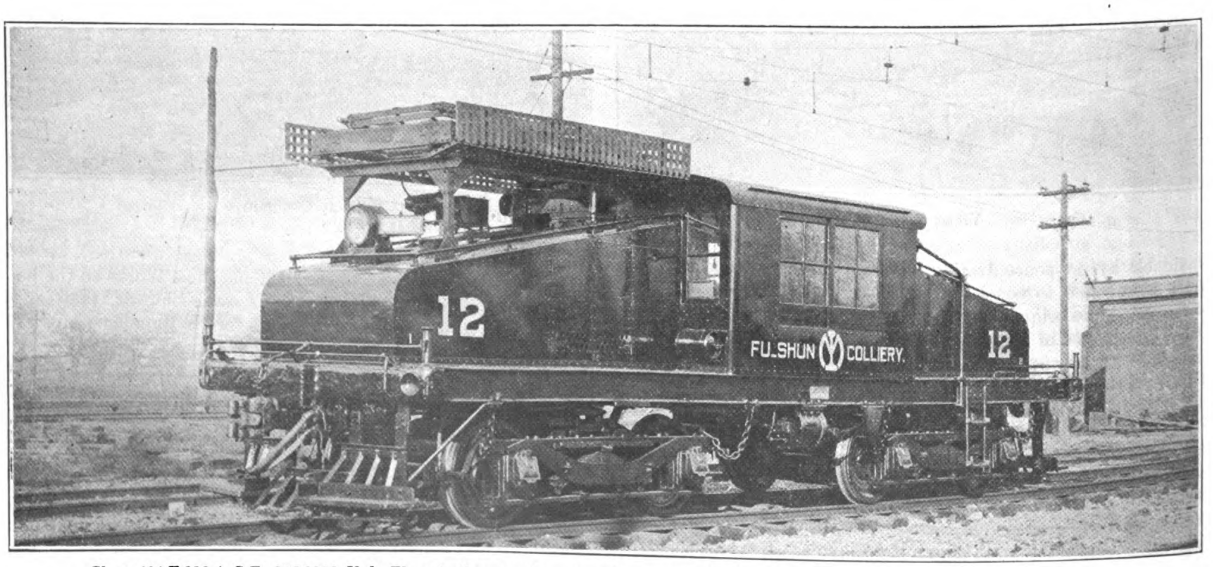


East Anshan Iron Mines

cent. of iron should be used as raw material to be charged into the blast furnaces, the above-mentioned period may be extended to about fifty years. However, the Anzan Iron and Steel Works should not be satisfied with the production of from 150,000 to 200,000 tons a year. By raising the annual output to 500,000 tons, nay even up to 1,000,000 tons, the Works may well be regarded as worth founding.

When such possibilities are considered, the exploitation of Takushan Mine alone will not do. The utilization of the major portion of hematite as raw material by all means would be absolutely necessary for the annual production of 500,000 tons to 1,000,000 tons a year. It is on this account that the problem of the briquetting of hematite assumes a most significant complexion. It is regrettable to say that, with hematite produced at Anhan, no tangible instance of a satisfactorily economical solution has yet been known, nor has the study of the same subject advanced, and therefore it can hardly be said conclusively that it permits of conversion into an artificial rich ore as advantageous as the one to be made from magnetite. Still, what may be done in order to attain this object seems predetermined and it is considered to be quite practicable. For this reason, a proper or adequate study of this problem should be prosecuted and, we are made bold to believe that little stands in the way of getting ready the sufficient raw material for the manufacture of 1,000,000 tons of pig iron a year at some future date. Cokes are made from coal by dry distillation. The coal may be composed chiefly of Fushun coal mixed with suitable amounts of Penchihu or Kaiping coal, and the mixture will put out a coke highly suited to the use of an iron and steel works. We may speak with confidence from the coal reserves of these collieries that their supply will prove quite adequate. Limestone is in less demand than the ore and cokes, and the district, in which the new Works stands, abounds in limestone.

As above stated, there is no reason to fear the shortage of the principal raw materials for the Iron and Steel Works. Seen from its relation to the raw materials only, the Anzan Iron and Steel Works stands in a more favourable position than any of its likes in Japan. Moreover, the very fact of its being located in the midst of the iron ore belt, an efficient raw material may be obtained at a comparatively moderate rate even if some outlay may be required for the ore-concentration. Even now, the iron ore is supplied on very moderate terms. The cost of the iron ore does not amount to 20 per cent. of the production cost of pig iron per ton. Cokes cost dear nowadays, taking up about 40 per cent. of the production cost. This is owing chiefly to the high price of coal. In the iron and steel manufacturing industry, coal forms an important factor having a serious bearing upon the production cost. Consequently, its supply on low terms is essential, and at the same time it must be used in the most effective manner. The quality of an ore is closely related to the quantity of coke to be charged into the blast furnace.



Class 404-E-112-4 G.E. 207-1200 Volt Electric Locomotive, operating at the Fushun Collieries of the South Manchuria Railway

To return, the collieries supplying coal, the primary raw material cannot be said to lie at great distances. Furthermore, these collieries being closely related to the management of the Iron and Steel Works, there are ample facilities available.

The most convenient market for the product is Japan, as may be seen obviously. Supposing that a Steel Works turning out 1,000,000 tons of pig iron a year should exist to-day, the Japanese market can easily digest the annual product. The only question to be considered is the competition with the foreign imports. However, from the point of distance only, the Anshan products are at an advantage, compared with the foreign imports. If the cost of production should not be much dearer, the Anshan manufacture would have fair chances to come out of the competition favorably. But, the present day ability of the Japanese is feared to fall short of directing and manipulating this complex and gigantic enterprise. Furthermore, they are lacking in experience. Naturally, the producing cost will be raised, making the Anshan product placed awkwardly in competing with the foreign imports. Such a state of things cannot be regretted too much. But, it would be too much to expect an easy success by aping the intricate industries of the West, in which the technical geniuses and talents have concentrated their energies on the invention and improvement of these industries, raising them to what they are to-day by paying dear sacrifices and by turning to most account the experiences and discipline acquired by efforts of over a hundred years.

Moreover, under the import tariff now obtaining, it might be likened to a mere boy running a race with a grown up athlete. It could hardly be a race.

The steel manufacturing countries like Great Britain, the United States, Germany, etc., adopted a liberal protective policy for steel manufacture at is early stages, and if Japan wishes to foster the same industry, she ought to follow the example. From this point of view, the question of the market for the products of the Anzan Iron and Steel Works may find a solution.

As stated above, the Anzan Iron and Steel Works has little to concern itself about as to either the supply of the necessary raw materials or the market for the manufactures; it is also feasible for the Works to put out 1,000,000 tons pig iron a year some day. However, as to the practical questions what should be done with the Works and what will become thereof, they remain riddles that will be solved by time only.

Chinese Engineers in Convention

WESTINGHOUSE is not neglecting its future interests in China. The company has opened its factories for the training of Chinese electrical engineers. Their contribution in this direction was emphasized by the delegation of bright young engineers sent from their factory to attend the last joint convention of the Science Society of China and the Chinese Engineering Society of the United States, held last year at Princeton University. These two organizations are made up of Chinese graduates of engineering and scientific schools, their purpose being the furtherance of scientific experiment and learning. Knowing that the future development of their country depends largely upon the advancement of its people in engineering knowledge, Chinese students have seriously pursued these studies in the various colleges of the world. America, while leading in the number of young engineer graduates, has no monopoly in this branch of education, as some of the brightest and most successful of these engineers have been educated in England and the work of the Hongkong University merits great praise. Statistics show that they practically always rank amongst the highest in scholarship.

The convention was a good indication of the serious manner in which these Chinese students in the United States have been pursuing their scientific and engineering work in preparation for solving the industrial problems of their native land. It is largely through such co-operation that the Chinese people gain inspiration for the many scientific and engineering achievements that they are making. The chairman of this convention was Mr. G. Chow of the Westinghouse Electric & Manufacturing Company. The scope of the convention may be judged from the title of some of the papers submitted and the addresses before the convention. Miss A. Lee, speaking on "Scientific Methods of Education," Mr. G. Chow, on "The Electrification of Steel Mills," Mr. Y. G. Chen, submitting a "Thesis on in Chemistry," Mr. Y. T. Yao, on "Historical Development of the Principle of Relativity," Dr. C. H. Hu, on the "New Knowledge of Nutrition" and H. C. Wang, on "Railway Signal and Interlocking."

THE GROUP FROM WESTINGHOUSE

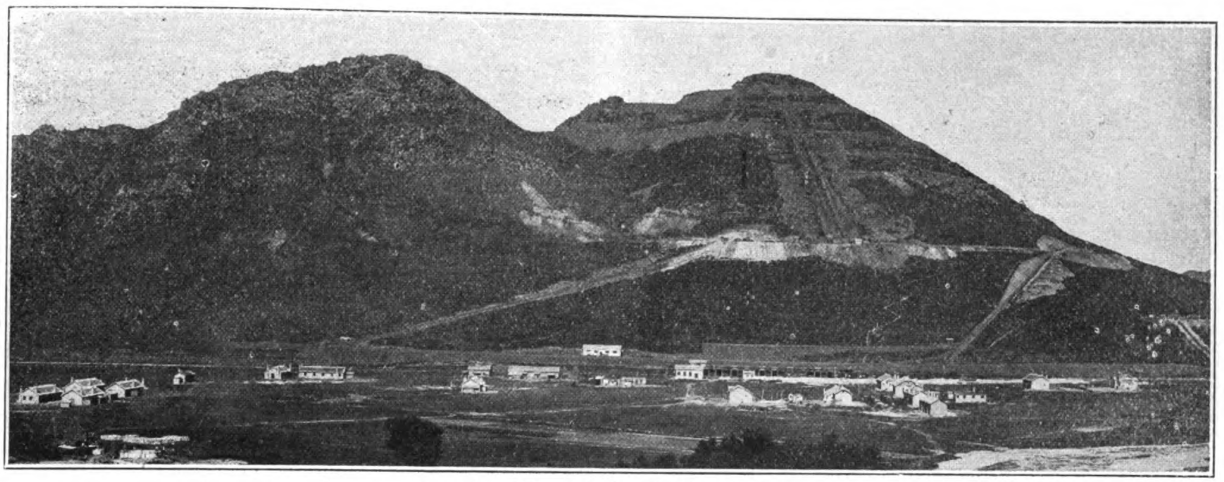
Left to Right: Front Row: C. S. Young, G. Chow, J. K. Chin
Second Row: N. T. Chow, Molin Ho
Rear: T. Nih

A Silk Testing House for Shanghai

Mr. D. E. Douty, of the United States Testing Co., arrived recently in Shanghai, to establish the Shanghai testing house, authorized by the United States Testing Co. Mr. Douty will undertake the preliminary work of instituting American testing methods in the Chinese market.

The latest testing methods and the most modern machinery will be installed in the Shanghai plant.

The co-operation of the Chinese filature operators in the establishment of a testing house was promised during the International Silk Exposition, when a mission headed by Ting Ju Ling visited New York. At the time of the annual meeting of the United States Testing Co., an increase in capitalization was voted, which, when met with financial assistance from the Chinese, assured the success of the institution in New York.



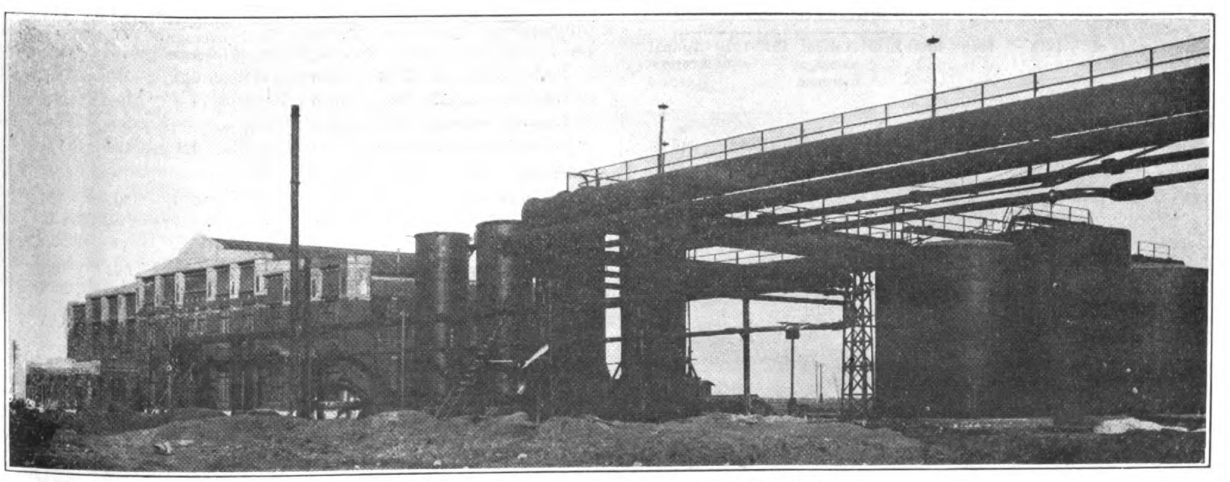
Anzan Iron Mines, The Ta Ku Shan Workings

Fushun Colliery Development

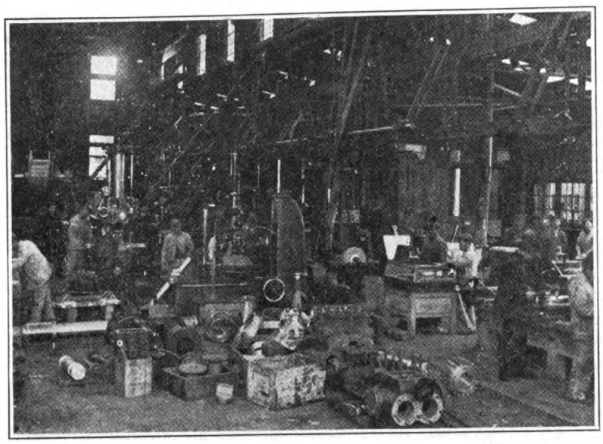
American Experts Arrive

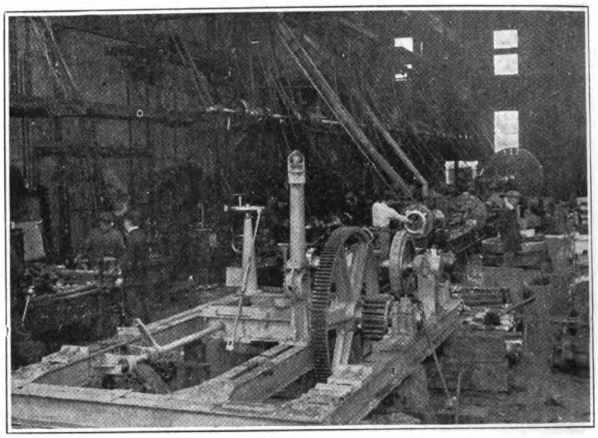
IN order to carry out its latest ten-year program for the development of the Fushun Collieries and the Anshan Steel Works, the South Manchuria Railway Company is now engaged in carrying out most exhaustive investigations, and to this end, Viscount T. Inouye (acting general superintendent of the Fushun Mines and Anshan Steel Works) recently made a visit to the United States and there engaged the services of several prominent specialists. Amongst these are Professor W. R. Appleby, dean of the School of Mines of the University of Minnesota, Prof. W. H. Emmons, head of the department of geology and minerology of the same University, Prof. Mead, a geologist of the University of Wisconsin, Mr. Davenport, ex-chief of the mining department of the American Steel Corporation, Mr. Charge, assistant chief of the coal mining department and Mr. Hutchinson, another engineer of the same corporation. This party is to make exhaustive studies and investigations for the proper development of the low-grade Anshan iron ores, in addition to devising extensions to the Fushun coal mines and a plant for the extraction of petroleum from shale and coal. A large part of the expenditures to be made by the S.M.R. Company during the next four years, estimated at $200,000,000 gold, is to be inverted into improvements and extensions to the coal and iron mines.

The Fushun Collieries have been often described in the pages of THE FAR EASTERN REVIEW, but we present herewith some up-to-date information on the coal and iron mines extracted from a papers by Mr. S. Otsuru and K. Wada written for the *Light of Manchuria* the official organ of the South Manchuria Railway Company.

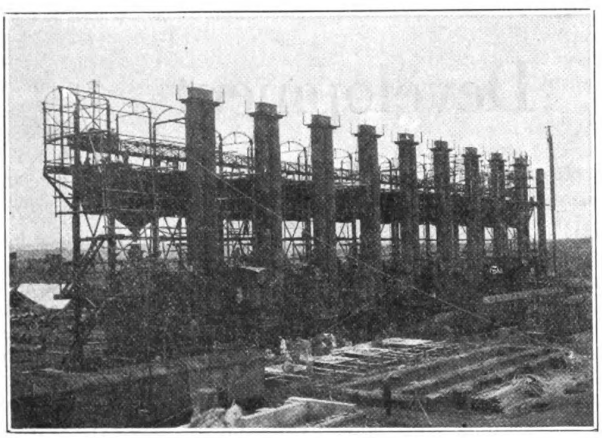


Sulphate of Ammonia Factory, Anzan, South Manchuria

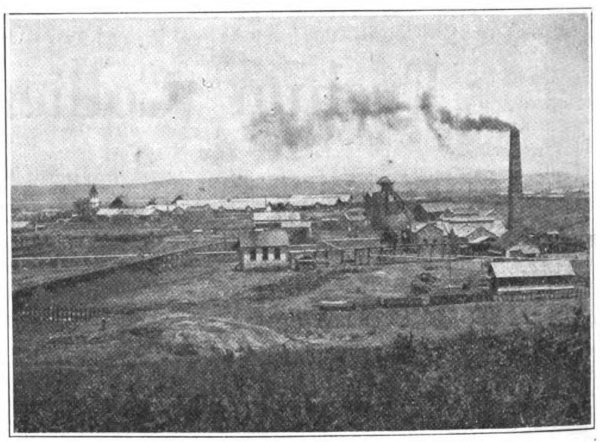




INTERIOR OF MACHINE SHOPS



Gas Producers



Chienchintai Pit

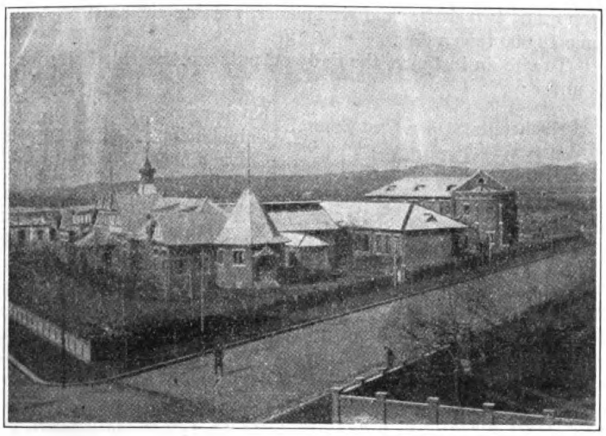
VIEWS OF THE SOUTH MANCHURIA RAILWAY COMPANY'S FUSHUN COLLIERIES

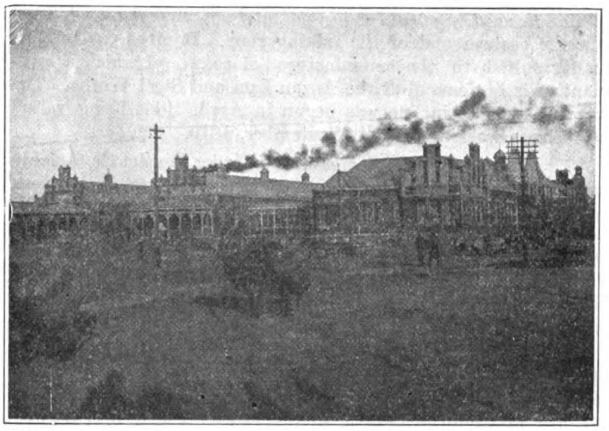
Unit : 1,000 tons.

Coal outputs of Manchuria	1918	1919	Rates of Increase 1908-1919	Annual average increase	1915-1919	Annual average increase
Demands:						
For use of S. M. R. Co.—						
Fushun coal	865.8	1,340.2	3,678	408	1,768	442
Other coals	158.2	111.4	—	—	—	—
Imported coals...	8.4	166.8	—	—	—	—
Total.....	1,032.4	1,618.5	3,995	444	1,799	449
Local sales:						
Fushun coal	900.2	1,012.2	2,364	262	638	159
Other coals	526.3	593.1	—	—	—	—
Imported coals...	—	164.9	—	—	—	—
Total.....	1,446.5	1,770.4	4,100	455	1,023	255
Exports:						
To Chosen—						
Fushun coal	397.9	156.2	1,197	133	369	092
Other coals	3.2	0.3	—	—	—	—
Imported coals...	55.9	59.8	—	—	—	—
Total.....	457.2	216.3	1,480	164	140	035

To Abroad	1918	1919	Rates of Increase 1908-1919	Annual average increase	1915-1919	Annual average increase
Fushun coal	339.6	195.8	174	019	593	148
Other coals	38.8	34.6	—	—	—	—
Imported coals...	2.0	52.4	—	—	—	—
Total.....	380.5	283.0	191	021	496	124
Bunkers:						
Fushun coal	135.9	83.7	685	076	505	126
Other coals	3.1	—	—	—	—	—
Imported coals...	93.1	100.4	—	—	—	—
Total.....	232.3	184.2	2,550	282	062	015
Grand Total Bunkers:						
Fushun coal 2,639.6		2,788.2	1,947	216	381	095
Other coals	729.9	739.6	—	—	—	—
Imported coals...	159.6	544.6	—	—	—	—
Grand Total ...3,529.1		4.072.5	2,882	322	653	163

BRIEF HISTORY.—Coal mining at Fushun dates from 600 to 700 years back when, in the Liao Chin reign, a number of Koreans came to Fushun to mine coal for the manufacture of pottery.





Fushun Collieries: School House and Hospital

Subsequently, the Moguls rose and fell. Under the Manchu dynasty, the mining work was prohibited on account of the proximity of Fushun to the tombs of the imperial ancestors. The Peking (Manchu) government, awakening to the profit of mining the coal, withdrew the ban in 1901 and gave permission to some Chinese to operate the collieries.

It was in about 1903 that the Russians, who were then in the ascendancy in North and South Manchuria began to cast longing eyes upon the Fushun Collieries. They started to invest capital in the management of the mines. In 1904, they constructed a railway and subsequently opened hostilities with Japan. On March 10, 1905, the Japanese army, which was on that day in the very thick of the successful battle of Mukden, took possession of the Fushun Collieries. The army opened a mining office and soon afterwards set about a semblance of an organized mining under the directions of the mining corps of the Japanese field railway paymasters' department.

South Manchuria Railway Company.—On April, 1907, on which date the South Manchuria Railway Company took over management of the railways ceded to Japan by Russia, which have been styled the South Manchuria Railway Lines, the Railway Company also assumed management of the collieries at Fushun, Yentai and Chatzuyao, and in July of the same year, the two minor collieries at Taochiatun and Shihpeiling were taken over also from Russia in terms of the Russo-Japanese Railway Agreement.

Of the above-mentioned collieries, both Fushun and Yentai have lain under management of the South Manchuria Railway Company and the Chatzuyao colliery (in fact an insignificant ore) of a private Japanese ; whilst the collieries at Taochiatun and Shihpeiling were entrusted to the management of the Souh Manchuria Mining Co., Ltd., a Japanese corporation, in 1918.

First Stage of Fushun Mining Plan.—At the time when the Railway Company took over the Fushun Collieries, they were worked only on a small scale, and between the three pits at Chienchinchai, Yangpaipu and Laohutai, the daily outputs totaled only 360 tons. When the late Dr. B. Matsuda took up his duties as the first superintendent general of the collieries, the energetic and experienced expert drafted what is known as the plan for the first stage of Fushun coal mining estimated to cost Y.9,200,000. The same plan had as one of its prominent features the excavation of two extensive shafts at Chienchinchai and Yangpaipu. The two shafts were completed in 1911 and were respectively named Oyama and Togo pits. Sundry improvements were introduced in other directions, and the daily outputs were raised to 5,000 tons.

Second Stage of Fushun Mining Plan.—The second stage of Fushun mining plan was entered upon. On the death of Dr. Matsuda (the successful organizer and first manager of the collieries) in 1911, Dr. S. Yonekura succeeded the deceased in July of the same year.

The chief items of enterprises carried out during this stage were as follow :

1. Completion of excavation of an incline at Wantawu (commenced in April, 1914, and opened to operation in April, 1915).

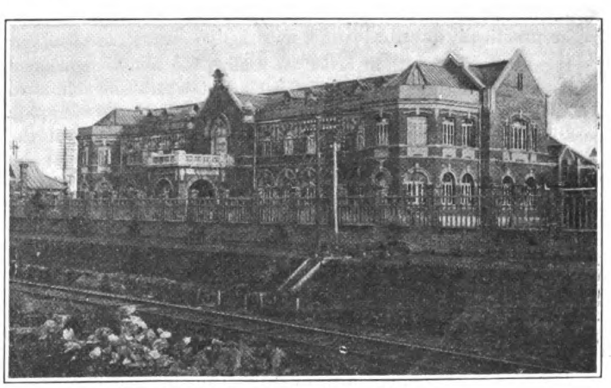
2. *Open Cast at Kuchengtzu.*—As already mentioned, owing to the unparalleled thickness of the Fushun coal seam, the most commendable plan of mining is to work the portion at comparatively shallow depths on the open cast system and the rest at greater depths on the sand-flushing system.

The coal seam about Kuchengtzu is located at the western edge of the coal belt and is 400-ft. thick, and only 40-ft. from the surface of ground. On this account, it was decided to be operated on the open cast system. Work was begun in April, 1914, and was opened to business working in April, 1915.

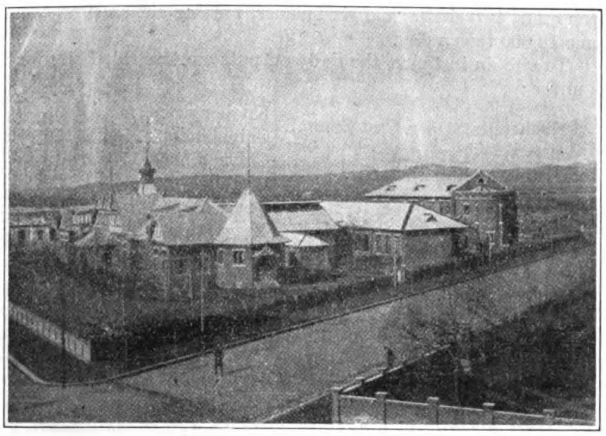
3. Sand-flushing method was introduced first into Yangpaipu pit in 1912, and was extended to Oyama, Togo, Laohutai and Chienchinchai pits.

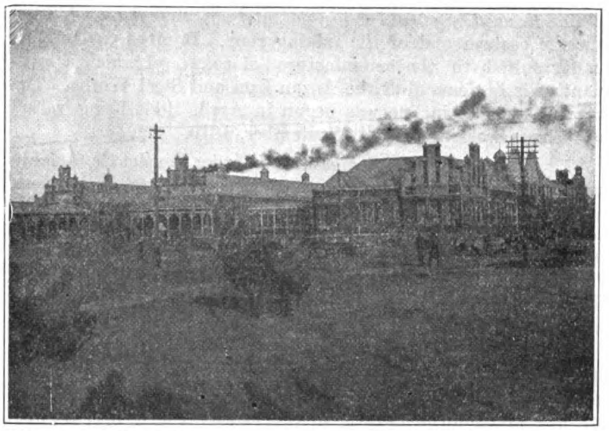
4. *Construction of Mond Gas Producers' Plant.*—Since Fushun coal contains a comparatively large percentage of nitrogen (the percentage ranging from 1.3 to 2.9 per cent.), it was planned to extract the nitrogen for the manufacture of sulphate of ammonia, besides procuring such bye-products as pitch, tar, naphthaline, etc., with the object of bringing down the expenses for the motive power. Consequently, the Mond gas producers' plant was founded, it being completed in March, 1915.

5. *Coal-carrying Sidings and Electrization of Sand-gathering Sidings.*—Both coal-carrying and sand-gathering railway sidings at and about Fushun were electrized so as to expedite the work of transportation. The work was effected by October, 1914.



Head Office of the Fushun Colliery





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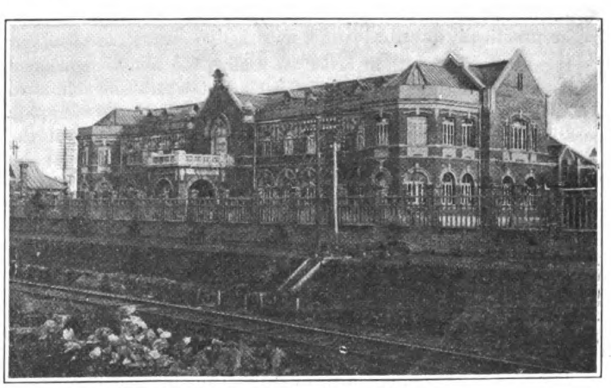


Head Office of the Fushun Colliery

6. *Excavation of an Incline at Lungfeng.*—Lungfeng is located near the eastern end of the mining zone. It gives coal of fine quality suited to the manufacture of cokes, of which a large quantity is in demand at the Anzan Iron and Steel Works. The excavation of an incline was begun in April, 1917, being raised to business working order in September, 1919.

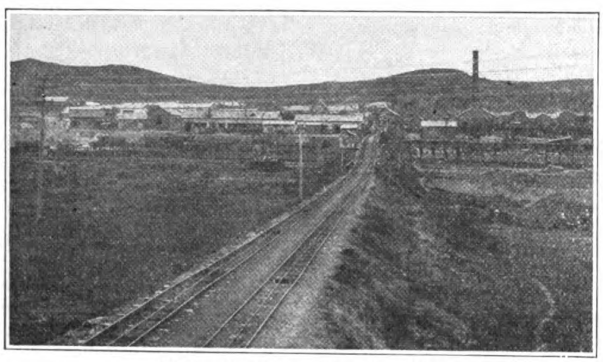
7. *Open Cast at Chienchinchai.*—In order to meet the quickly increasing demand in consequence of the great war, a new open cast was initiated at the west of the Chienchinchai pit.

8. The excavation of another incline was started in May, 1918. It was opened to business working in April, 1920.

Through the introduction of all these enterprises, the total daily outputs were increased to about 7,000 tons a day by the fiscal year 1918.

THIRD STAGE OF FUSHUN MINING PLAN.—The great war inflated also the economic activities in Manchuria and Chosen, substantially increasing the population. Many fresh industrial ventures were launched afresh in these regions, making it impossible for Manchurian coals to fill the rapidly rising requirements. To make up for the shortage, it was necessary to import 150,000 tons of coal in the fiscal year 1918 and 490,000 tons in the following fiscal year, 1919.

The possible increase of demand in Manchuria and Chosen, particularly by the Anzan Iron and Steel Works, had to be considered, and under these circumstances, what is designated as the ten-year program was drawn up in 1919.



Fushun Collieries: Yanpuipu Pit

On the resignation of Dr. S. Yonekura (superintendent-general of the collieries) at the end of 1919, Viscount T. Inouye (professor of the Imperial University, Tokyo) succeeded him as acting superintendent-general, additionally holding the superintendency-general of the Anzan Iron and Steel Works.

The ultimate object of the ten-year program lies in contriving a quick increase of the output so as to meet all possible contingencies and in effecting as much saving of mining cost as well be practically possible.

It was agreed that, in order to realize the above-mentioned aims, the two existing open casts at Kuchengtzu and Chienchinchai should be connected and operated as one, and that the stripping operation should be extended further to the present site of the railway town of Chienchinchai, that three new extensive shafts should be excavated, so that by 1929 the annual outputs may be increased to 8,000,000 tons (inclusive of 3,400,000 tons from the open cast, which will be 46 per cent. of the total yield), and that twenty years hence, that is, by 1939, the annual total may be increased to 11,000,000 tons.

The first steps taken in the above direction are the extension of the Chienchinchai open cast and the excavation of the Lungfeng pit.

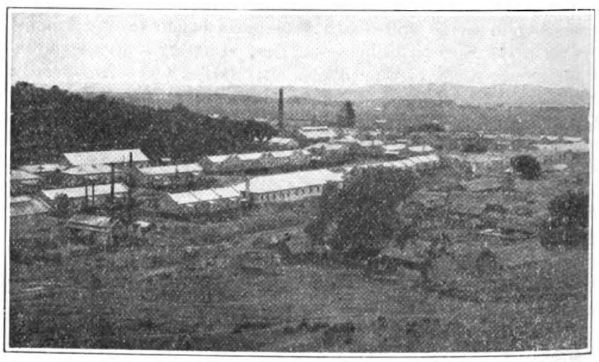
PRODUCING CAPACITY OF FUSHUN COLLIERIES.—As above stated, the Fushun Collieries are being operated by means of two open casts, two shafts, and six inclines, putting out amongst them some 10,000 tons a day.

To cite an instance, the daily outputs on April 14, 1920, were as under :

		Tons
Kuchengtzu Open Cast Zone ...	Kuchengtzu ...	1,638
	Chinchinchai ...	1,179
Oyama Mining Zone	Chienchinchai...	1,519
	Oyama ...	2,033
Togo Mining Zone	Togo	999
	Yangpaipu ...	1,693
Laohutai Mining Zone ...	Laohutai ...	1,344
	Wantawu ...	684
Lungfeng Mining Zone ...	Lungfeng ...	516
	Hsintun ...	135
	Total... ...	11,742

The following gives the annual outputs of the different pits from 1907 down to 1919, the unit being 1,000 tons :—

	Open Cast No. 1	Open Cast No. 2	Chienchinchai	Oyama	Togo
1907... ...	—	—	103.3	—	—
1908... ...	—	—	238.8	—	—
1909... ...	—	—	324.1	0.1	—
1910... ...	—	—	370.4	14.4	17.4
1911... ...	—	—	404.9	186.4	146.6



Lanhutai Pit

1912... ...	—	—	384.8	359.9	252.0
1913... ...	—	—	579.5	421.1	414.9
1914... ...	2.1	—	683.6	235.0	472.2
1915... ...	102.7	—	623.1	301.6	430.4
1916... ...	173.5	—	572.3	305.2	170.8
1917... ...	272.3	0.2	602.7	135.7	291.4
1918... ...	260.7	66.8	486.0	328.2	319.5
1919... ...	231.3	300.4	307.6	406.4	319.5

	Yangpaipu	Laohutai	Wantawu	Hsiutun	Lungfeng	Total
1907... ...	64.5	65.5	—	—	—	233.3
1908... ...	127.3	124.6	—	—	—	490.7
1909... ...	176.1	192.7	—	—	—	693.2
1910... ...	217.8	279.0	—	—	—	899.2
1911... ...	301.6	285.0	—	—	—	1,324.5
1912... ...	219.2	261.5	—	—	—	1,471.1
1913... ...	290.7	473.0	—	—	—	2,179.2
1914... ...	381.8	420.1	—	—	—	2,149.8
1915... ...	471.8	179.4	53.4	—	—	2,162.6
1916... ...	499.1	257.8	65.6	—	—	2,044.4
1917... ...	598.0	295.5	110.7	—	5.1	2,311.4
1918... ...	501.5	393.7	157.0	—	74.5	2,521.2
1919... ...	454.7	405.0	164.7	18.1	155.2	2,762.7
Grand total... ...	...	...	...	...	...	21,242.3

LOCATION TOPOGRAPHY, AND GEOLOGY OF FUSHUN COLLIERIES.—Fushun Collieries are located at about 23 miles east of Mukden, and Chienchinchai in the western part of the Fushun coal belt is situate at 33 miles northeast of Sushiatun junction at which the branch line to Fushun Collieries deviates from the main line of the South Manchuria Railway Lines. At Chienchichai, the colliery town is located. More correctly speaking, the central location post in front of the general offices of the Fushun Collieries stands at 41° 58′ N.L. and 124° 6′ E.L. and above 276-ft. above the sea-level. It is 266 miles distant to Dairen, 193 miles to Antung, and 202 miles to Yingkou (Newchwang).

COLLIERY TOWN OF FUSHUN.—Dr. S. Yoshino (professor of the Imperial University, Tokyo) is said to have once remarked that the Fushun colliery town is a miniature of the town of Jena. Since it is the colliery town, the colliery offices and the residences of the Company's officials and employees, together with the primary school, the colliery hospital, the colliery club, the assembly hall, the colliery library, etc., make up the principal buildings. In recent years, stores and shops of different kinds have been opened, but not a street is remarkable for dense traffic. Each street has a vehicular road with a sidewalk on each side lined with shade trees such as acacias, poplars, elms, etc.

In early summer, when these shade trees wear a verdant foliage, through which glimpses of red brick buildings may be caught, and the sweet scent of the white acacia flowers fills the streets, even the crude colliery town lends itself some charming air which may appeal to visitors.

The River Hun has its head among the mountains near Hsingking situated to the east of Fushun. For some fifty miles or so, it gathers petty tributaries and run down the narrow defiles and gorges. The valley considerably gains in size rather abruptly near Tachiapang situated about ten miles east of Chienchinchai. At that point it is about three and a half miles in width, still further expanding as it goes west, connecting with the great plain about Mukden.

FUSHUN MINING ZONE.—The Fushun mining zones lie in this valley, stretching from east to west on the south bank of the Hun River. On the east of the mining zone runs the Tungchou River, a tributary of the Hun, and on the west the Kuchengtzu, another tributary of the Hun. The mining zone is about ten miles from east to west and about two miles from north to south.

From the top of Senkindai (an eminence rising on the south of the colliery town) one may command a fine view of the Hun Valley. In the east, a range of hills is seen undulating and zigzagging. This range of hills marks the southern boundary of the Fushun mining zone. Near Laohutai in the centre of the mining zone, the same range sharply takes a northern direction. This geological feature was caused by the extensive fault running from north to south. This same range may be likened to a pillow for the great coal seam. These hills are constituted of basalt wholly, and on the north side, facing the Hun River, the coal seam has the uniform dip of about 30°.

The enormous coal hoard estimated at 1,000,000,000 tons lay quiet and unnoticed on the bed of basalt, covered with layers of rocky formations. Thus the hoard had lain dormant for billions of years, until the outcrops showing above ground at several points betrayed at length the existence of the subterranean wealth and led to human exploitation. The geological structure of Fushun and environs is composed of hornblende gneiss, which bears a resemblance to both ignious rock and sedimentaryrock, is supposed to have been formed on the "second day of the creation." In the tertiary period of the Cainozoic Era, such layers as those of tuff, sandstone, conglomerate, and shale are supposed to have been brought into existence, and the district is supposed to have been turned into a lake. The lower structure has a couple of thin coal layers running one over the other through it. These layers are called the lower coal-bearing series, the upper 20-ft. thick and the lower only 2-ft. thick, being from several feet to dozens of feet apart. There are traces of the upper layer having been mined from olden times, and such minor mines as Piaoerh Colliery, Hsiaopiao Colliery, Huasheng Colliery, and a few others are being worked upon this layer. The geological layers were organized one after another in the above-mentioned order, completing the earth's crust. Animal life became propagated steadily. The mammals, in particular, were developed wonderfully. In the mean time, the volcanoes were active, and about Fushun, too, there occurred volcanic eruptions, pouring out lava and turning the country into a veritable hell. It was this lava that became basalt, which overlaps the lower coal measures. Again, pozzuolana settled down into tuff.

These layers were overlapped in turn by others of shale and sandstone, and then in the course of millions of years, the herbage, driftwood, fallen trees, etc., were heaped and buried under ground. Under the high pressure and strong heat, they became completely carbonized, thus the principal coal layers of the Fushun coal seam, which has no parallel in the world in point of thickness, came to be formed.

FUSHUN COAL LAYERS.—The Fushun coal seam is 78-ft. thick near Lungfeng pit, inclusive of 31-ft. of parting, where it is the thinnest, while directly underneath the colliery town of Chienchinchai, where the seam is the thickest, it is 426-ft. in thickness, inclusive of 19-ft. of parting. The mean thickness of 150-ft. (inclusive of 20-ft. of parting) is found at Laohutai. The contrast with the coal seams in Great Britain, the United States and Germany, which range from only 2 to 10-ft. in thickness, is indeed striking.

OIL SHALE.—Over the coal seam, a layer of shale of brownish color, about 300-ft. thick, was formed, and this is in turn overlapped with a still another layer of shale of greenish color and of remarkable thickness (measuring 450-ft. on an average in thickness). It is this oil shale that has acquired much importance as material for extracting crude petroleum from, for instance, in the United States owing to the short supply of kerosene in recent years.

The oil shale at Fushun has only a meagre percentage of crude petroleum. However, in case of the gigantic stripping plan being carried out according to the present scheme, an immense quantity of the oil shale will have to be excavated and removed, and it furnishes a problem for settlement, in order to obtain petroleum therefrom.

FAULTS.—The organization of the earth's crust progressed in good order as mentioned above, and finally a noteworthy accident happened. As a result of the contraction of the earth's crust, in the centre of the great coal field, a crack or fault of considerable dimensions was created from east to west.

Presumably through the strong pressure on both sides of the coal seam, its central part became pushed up, and it was possibly from some weakness caused by a development in the due order of the geological structure, that the northern part of the seam was pushed up abruptly, whilst in the south the seam dipped northward at about 27°. There was perhaps coal in the northern half of the seam, but now only the lowest layer of gneiss is exposed, and there is no trace of coal, which might have been either washed away or have eroded.

The southern half of the coal seam has fortunately been protected. Since basalt, in its nature, has a great resistant power against weathering, it has been left as a line of hills bounding the southern fringe of the coal field. The coal seam itself, together with the shale layer, is overlapped by the diluvium formed by the Hun River, in the quaternary period, which consists of clay and alluvium being from 30 to 80-ft. in thickness.

MAGNITUDE OF COAL HOARD.—The approximate dimensions of the Fushun coal seam have been ascertained by technical estimation, according to which the scum extends from east to west beyond the limits of the Fushun colliery zone, whilst on the south it starts from the foot of the basalt hill and extends in width from 1 mile to 1½ miles. None is found to exist on the bank of the Hun other than above mentioned. The coal hoard in this zone is estimated at about 1,000,000,000 tons.

QUALITY OF FUSHUN COAL.—Fushun coal is practically uniform in quality. As it proceeds eastward up to Lungfeng pit from the west of Kuchengtzu and Chienchinchai, the coal is found

to gain in coke, nitrogen and ash, whilst it loses in volatile matter; Near Chienchinchai, an extremely hard coal, often called "Kabari," is met with in parts of the seam. "Kabari" is used as materia[1] for carving, and figures of popular fairy saints, flower-pots, etc., are carved in the lustrous jet-black coal and are on sale, commanding a pretty brisk demand as souvenirs to visitors to the colliery, Orientals and Westerners. In some parts of the seam, the coal contains much amber, and the Chinese handicraftsmen turn out medicine cases, seal-cases, and like knick-knacks. This particular kind of coal is known to have been carbonized from coniferae. Occasionally, small pieces of pirite are noted to be fastened to the cleaven part of coal. About Kuchengtzu, siderite is mined and makes a material for iron manufacture.

RESULT OF LATEST ANALYSIS :—The result of the latest analysis of Fushun Coal is as follows :—

	Water	Volatile matter	Fixed carbon	Characteristic of coke	Ash	Colour of ash
Maximum	3.25	43.01	51.89	Slightly expansive Caking	18.5	Yellowish
Minimum	5.84	33.96	42.90	Caking	17.30	Greyish
	Sulphur	Nitrogen	Calorific power			
Maximum	0.81	1.38	7.750			
Minimum	0.46	1.21	6.170			

From the above table, it may be seen that the comparatively larger percentage of water is a drawback of Fushun coal, which lowers the calorific efficiency compared with the weight. It also interferes a little with the combustion of dust coal which has become quite a popular usage lately. However, the latter difficulty may be surmounted by means of the drying appliances. Next, Fushun coal was considered as falling short of caking property, which renders it unsuited to the manufacture of coke for the smelting furnace of a steel works. Luckily, a coal possessed of a good amount of caking property has been found to occur in the eastern part of the coal seam, and this coal has proved very acceptable. It was for this reason that the two pits of Lungfeng and Hsintun were excavated recently in order to supply coke to the Anzan Iron and Steel Works.

Another characteristic of Fushun coal is that it is rich in volatile matter. This facilitates combustion and adapts Fushun coal to various uses. In particular, as a gas producing coal, Fushun coal takes the first place among its likes in all the Orient.

Again, the fact that Fushun coal contains an unusually large amount of nitrogen suggested the profitability of recovering ammonia by establishing a Mond gas-producer plant. During the great war, the Fushun collieries management could operate twenty generating furnaces on the Mond system and fourteen others on the Limm system so as to put out sulphate of ammonia in a large quantity as a bye-product, while generating electric power.

Last but not least, Fushun coal has still another advantage in that the ash percentage is comparatively low. The percentage seldom goes above 4 or 5 per cent.

It may be counted as still another advantage that the clinkers stick to the grate of the boiler but little, necessitating very small trouble in cleaning the boiler. Then, the contents of sulphur which does most harm to the boiler are extremely small.

Coal is classified according to the percentages of fixed carbon, water, volatile matter, calorific power, etc., into anthracite, semi-anthracite, bituminous coal and lignite of different degrees.

Fushun coal may be placed between bituminous coal of medium and low degrees.

Japanese Match Industry

There is considerable speculation as to the effect which the bill recently passed by the Japanese diet, prohibiting the use of yellow phosphorus in the manufacture of matches, will have on the match trade of Japan, says Reuter's Trade Service. Many manufacturers have foreseen the likelihood of such a bill being passed, and have taken steps to offset any damaging effect it might have on their business by experimenting with other chemicals. Many of the manufacturers have discontinued manufacturing yellow phosphorus matches altogether. There are, however, eight factories in Hyogo prefecture still using yellow phosphorus. Their production has decreased during the past year, partly owing to the prospect of such legislation, and partly on account of the economic depression. In 1919 the output of matches in Japan amounted to 2,436,900 gross boxes, valued at Y. 1,492,418. The output of 1920 was only 755,900 gross boxes, valued at Y. 472,312. Some manufacturers have huge stocks of boxes and labels used exclusively for yellow phosphorus matches, and do not know how to dispose of them before the prohibition becomes effective in a year's time. Unless there is a marked revival in demand these manufacturers stand to lose heavily.

American Aid to China's Tanning Industry

AMONG the new departments the Peking University is about to introduce into its curriculum will be a course in tannery under the instruction of Dr. H. S. Vincent and John Wang. The following is an extract from the announcement issued by the university :—

"In 1918 China exported $24,000,000 worth of raw hides and imported $15,000,000 worth of leather. There are but four tanneries in China rated as such by the Chinese government and these are relatively small. Such facts constitute a challenge to provide a means of contact for the students of China that they may grasp the economic problems and opportunities of the country. Leather being a basic industry, is being undertaken first, but if this effort is received and supported by the Chinese other branches of manufacturing arts will be offered as may be indicated.

"Twelve hours each week must be spent in the practice laboratory, each student acquiring a proficiency in the various processes of tanning. This practice laboratory is being provided with a complete equipment of modern leather working machinery from America and stocked with the necessary chemicals and dyes and the latest improved tanning compounds.

"For this leather department Peking University has secured two practical tanners who are college-bred men and have had experience in teaching the art of tanning, Dr. H. S. Vincent, the head of the department of leather manufacture, has been seventeen years a missionary in Siam. He instituted and successfully operated a school of leather manufacture in Siam. Dr. Vincent will be assisted by John Wang, who has proved his technical knowledge and practical skill in establishing the Hwa Pei Tannery in Tientsin. Added assurance of success consists in the co-operation of an American firm which stands foremost in the production of leather tanning compounds and whose service men are of international reputation. This firm will send their service men to China from time to time that they may render expert aid to the Peking University leather manufacturing department and to its students and graduates who may be operating tanneries."

Board Enlargement of English Shipbuilding Co.

The board of John I. Thornycroft & Co., Ltd., has recently been enlarged by the election of technical directors, and the secretary of the company, and now consits of Sir John E. Thornycroft (managing director), Mr. S. W. Barnaby, Sir Edwin Grant Burls, Mr. T. Donaldson, Mr. Alex. Glegg, J.P., Mr. J. Maughfling, Mr. John Smith, and Mr. T. Thornycroft. The founder of the firm, Sir John I. Thornycroft, continues his association with the company as advisory engineer and naval architect.

The Kirin Kwainei Railway

THE expiration of the provisional agreement for the financing and construction of the Kirin-Kwainei Railway having expired, it is reported that Mr. Ono, vice-president of the Industrial Bank of Japan, now in Peking, has been endeavoring to obtain its renewal. This has given rise to many loose stories about further Japanese loans to the Peking government in contravention to the consortium understanding. As a matter of fact this line is outside the scope of the consortium, and Japan is free to negotiate the loan for its construction whenever the Peking authorities are ready to to take up the matter. The construction of this railway was provided for in an agreement signed between China and Japan on September 4, 1909, to settle the questions surrounding the Korean boundary dispute. Article 6 of that agreement states :

"The government of China shall undertake to extend the Kirin-Changchun Railway to the southern boundary of Yenchai, and to connect it at Hoiryano with a Korean railway, and such extension shall be effected upon the same terms as the Kirin-Changchun Railway. The date of commencing the work of the proposed extension will be determined by the government of China considering the actual requirements of the situation and upon consultation with the government of Japan."

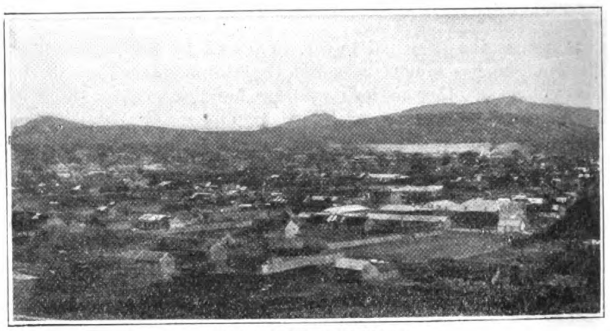
Subsequent to the above, a further agreement was entered iuto on October 12, 1917, between the Chinese government and the Yokohama Specie Bank for a loan of Y.6,500,000 with the Kirin-Changchun Railway as security, the terms of which placed the administration of the railway in the hands of the South Manchuria Railway Company, who receive two per cent. of the net profits for its services.

On June 18, 1918, a preliminary agreement was signed between the Chinese ministry of communications and a group of three Japanese banks (the Industrial Bank of Japan, Bank of Chosen and Bank of Taiwan) for the construction of the extension of the Changchun-Kirin line to Hweining on the Korean border, opposite the Korean town of Kwainei, the terminus of the short line which leads to the Korean seaport of Seishin. The amount the loan was reported to be $20,000,000, to be floated in the form of Chinese government bonds bearing interest at five per cent. and to be issued by the three Japanese banks. The security was to be the physical property and earnings of the line. The agreement provided also for the erection of a steel bridge over the Tiumen River to connect the Chinese and Korean systems, the cost of which was to be equally borne by the Chinese and Japanese governments. An advance of $10,000,000 was paid over to the Chinese government after the signing of the preliminary agreement.

The Banks of the Sungari River at Kirin. Huge Rafts of Logs are floated down from the Mountains to the South and East

The line is of great strategical and commercial importance to Japan, assuring to her another outlet for the raw products of northern Manchuria, and at the same time, strengthening her strategical position against a menace from the north.

The proposed line is 262 miles in length. Starting from Kirin, it passes through Tatun, Hsiakiang, Mifeng, Shuangchaho, Ohomuchan, Pataohotzu, Laoyehling, Takuchiatzu, Tachiaoho, Wulintun, Wulinkou, Chingling, Hsiaomachiatzu, Weihuling, Paotzukou, Pingfang, Chengchang, Choulitzukou, Peiweitzukou, Tunhua, Tungtuyaotzu, Tashitouho, Panchiaotzu, Haerhpa, Lingfengmichetzu, Liangchutai, Yushuchuan, Laotoukou, Shankuantaokou, Fungfassu, Tungkuantaokou, Chaoyangchuan, Lungchingtsun, Holunghsien, Huakushengling, etc. Most of the country is mountainous. The Sungari, Mutan and Tumen Rivers with their tributaries wind through this region, and their valleys contain fertile strips of land. Then, the zone marked with gentle undulations is mostly suited to cultivation and has plenty of room left for reclamation as the means of communication is developed.



General View of Kirin

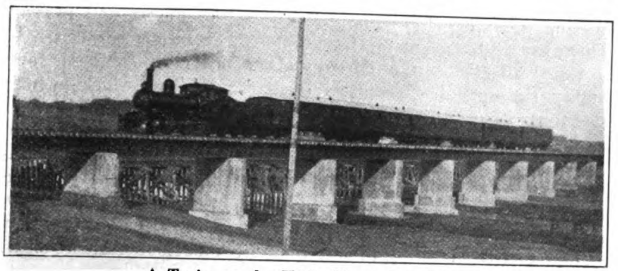
At present there are no means of communication and the territory is practically cut off from the outside world. Therefore few immigrants are attracted to this region. Moreover, it is surrounded with mountain ranges like high walls. Between Kirin and Omso and Tunhua, the two ranges of the Laoyehling and Changkwangtsailing run from northeast to southwest; between Chosen Peninsula (Korea) and Chientao there rises the Huaku Range; between Tunhua and Harbin there is the Paling Range; and on the south the Lungkang Range and the Mutanling Range, spurs of the Paitoushan Range.

This region is sparsely populated, and has no native industries, there being only 1,200,000 *hsiang* (or 864,000,000 *tsubo*) of land under cultivation divided among the twelve prefectures of Kirin, Huatien, Mengkiang, Shulan, Panshih, Tunhua, Omso, Ningan, Yenchi, Holung, Wangtsin and Hunchun.

The projected Kirin-Kwainei Railway will enable the arable area to be doubled in a short space of time. Especially, the agricultural products from the Sungari Valley and the fertile region of Chientao, which are often called the "Granary of Manchuria" will be of enormous quantity.

However, it is expected that the major portion of the traffic will consist of goods in transit from Changchun, to the Korean seaport of Seishin, rather than cargoes between intermediate points on the new line. For this reason, the products along the Harbin-Kwanchengtzu Section of the Chinese Eastern Railway and also the Kirin-Changchun Railway will be forwarded via the new railway for Japan, and as return freights, cotton yarn and cloth, together with sundries, will be brought for distribution to the district along the Kirin-Kwainei Railway.

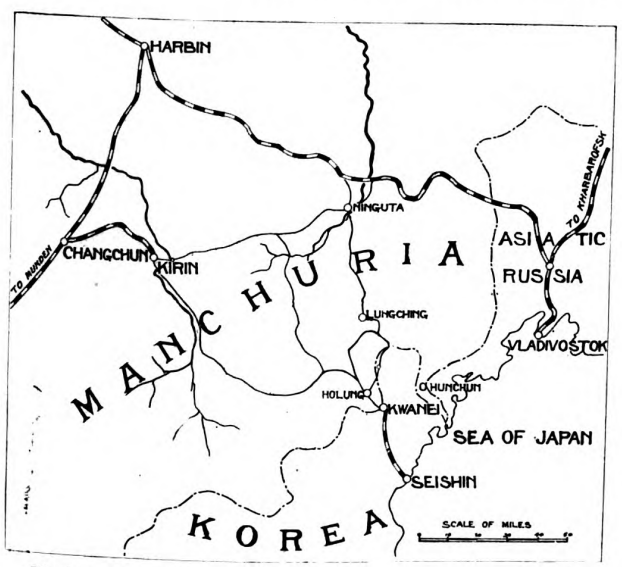
The greatest value of the road, however, will be in the opening up of this fertile region to bean and wheat production, and providing homes for the overcrowded population of other parts of China. The region is also well adapted for cattle raising, containing many rich grazing plateaus. It would be mere speculation to hazard any estimate of the acreage and crop possibilities of this



A Train on the Kirin-Changchun Line

region, of which so little is known. A recent Chinese official report on the resources of Kirin province states that the coal mining districts of the province are located in Machiakow, Hoshihlintse, Chinyao, Lwannikow and Penshilin of Kirin; Shahotse and Meikaokow of Itung; Yinchiakow and Penchaiho of Shulan; Wutaokow and Szetaokow of Panshih; Futushan and Talintse of Pinhsien; Kwanmentsutse of Hunchun, Fuyikow of Tungning, and Lannikow of Omu. Unfortunately, modern mining methods are conspicuous only by their absence and primitive practices, coupled with the financial inexperience of the promoters, cause the failure of many companies. The capital of the companies varies from a thousand dollars to a hundred thousand dollars. The Tung Yuan Mining Company has a capital of $100,000 and is located at Machiachow. The Pao Chih Company at Hoshihlintse is maintained with a capital of Tls. 100,000. These are only undertakings which conduct their enterprises on a large scale and which have sufficient reserve funds. The former has an annual output of 6,500 tons and easily ranks as the highest-producing mine.

There is little coal of superior quality in Kirin. Generally it is bituminous, soft, weak and of a dull appearance. It is slow in combustion and is unfit for steam purposes. Most of it is transported overland to the big towns or to the nearest railway stations.



The New Line Will Eventually Effect a Connection Between Kirin and Kwainei

Kirin, Pinkiang and Changchun are the venues of concentration, the Kirin-Changchun and Chinese Eastern Railways being used in transportation.

Quality and locality have to be considered in arriving at the price of the coal. On an average it is: Kirin, $5.50 per ton, Changchun, $5.20 per ton, and Pinkiang, $5.70 per ton. There is little local demand—firewood is mainly used as fuel—and the low quality of the product and the high transportation charges militate against its export.

Steamer Launched at Kowloon Docks

A SUCCESSFUL launch of a new steamer took place recently from the shipbuilding ways of the Hongkong & Whampoa Dock Co.'s premises at Kowloon Docks.

The vessel, a sister ship to the *Hektor* which was launched last February, has been built to the order of Messrs. Brunsgaard Kiosterud & Co. of Drammen, Norway, and under the supervision of their Superintendent Captain Ivar Siqveland.

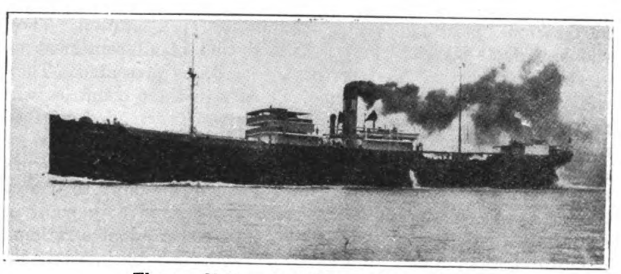
The launching ceremony was gracefully performed by Mrs. R. M. Dyer, the wife of the chief manager of the Hongkong & Whampoa Dock Co., Ltd., the vessel being christened *Hellen* as she left the ways.

After the ceremony the company adjourned to the offices of the Company where the usual toasts were honored.

The principal dimensions are as follows, viz.:—

Length between perpendiculars 400 feet, breadth moulded 52 feet, depth moulded to upper deck 31 feet, 'tween decks 8 feet, erections 7 feet 6 inches.

A total deadweight of 8,250 tons will be carried on a mean draft of 25 feet 6 inches, the speed loaded being eleven knots per hour.



The s.s. *Hektor*, sistership to the s.s. *Hellen*

Propelling machinery constructed by the builders is amidships and of 3,100 indicated horse-power, consisting of one set of triple-expansion surface-condensing engines having cylinders 27-44-73 inches diameter by 48 inches stroke, steam at 180-lbs. working pressure under forced draught being supplied by three cylindrical return-tube boilers of 15 feet 6 inches diameter by 11 feet 6 inches long.

The engine and boiler room outfit includes a Weir's D. C. heater and Weir's main feed pump, independent centrifugal circulating pump, also general service, ballast and condenser pumps.

Unusual in cargo steamers is the See's ash ejector and ash ejector pump installed for disposal of ashes from the stokehold.

The coal bunkers are of large capacity, and provision has been made for carrying oil fuel throughout the double bottom in accordance with Lloyd's requirements, the vessel having been specially surveyed during construction by Messrs. Gardiner and Morrison, local representatives for Lloyd's Register of Shipping.

"He describes at length, Belgium's foreign investments, amounting to 501,500,000 francs capital. Money this was which went into railway and industrial shares in Argentina, Brazil, Egypt, Canada, Mexico, China, Africa and America. Money invested with such skill that when the withering blast of depreciation hit Belgian currency and sent it tumbling to a quarter of its par value the foreign holdings of thrifty Belgian savers stood up like a rock. These holdings formed a bulwark on which to begin Belgian reconstruction, a bulwark as stanch as if the investments had consisted of reserved gold francs locked safely away in the government vaults.

"In more ways than one these foreign investments gave Belgium something to build upon. Attaché Cross says that 'to every young or undeveloped country of which the rich natural resources were judged capable of ultimately returning the initial investment with a profit Belgian surplus capital has been sent to promote real estate improvements, agricultural operations and building construction, or simply to participate in local enterprise.' And he said:

"'The zeal of Belgian capitalists in opening such fields has its origin in the nation's need for foreign purchasers to sustain its home industries, and foreign trade statistics amply show that, aside from the adjacent countries in Europe, the most active markets for Belgian manufactured products have been those sections in which Belgian financial interests have gained a firm foothold At the same time Belgian financial interests in countries producing raw materials and foodstuffs insure not only a fixed supply for Belgian industry and consumption but also a share in the profits from such purchases.'

"Belgium points the way to procure these outlets, and Attaché Cross transmits a document which the *New York Herald* points out, says to American toilers, savers and bankers, 'Go thou to the ant; consider her ways.'"

Belgium's success in other parts of the world is repeated here in China, where in the tenders for cars and locomotives opened on June 30th, at Peking, Belgian manufacturers underbid and obtained all the orders with the exception of five locomotives which went to the American Locomotive Company. The Societe Belge pour l'Exportation Industrielle, obtained for their principles the order for thirty Prairie type locomotives, and six English type locomotives for the Shanghai-Hangchow-Ningpo Railway, while Messrs. Fearon, Daniel & Company acting for the Cie. Centrale de Construction a Haine-St. Pierre, secured the orders for the 240 steel cars.

Belgians have also submitted the lowest tender for the Yellow River Bridge, or $10,881,297, and received the prize of $80,000 for the second best design, the prize of $25,000 for the third best design going to the French firm of Etablissement Brossard and Mopin, of Tientsin.

* * *

Japan and the Philippines

THE investigation of an American correspondent, Mr. Charles Edward Russell, into Far Eastern affairs, brings into bold relief Japan's real attitude towards the future of the Philippines, and if Mr. Manuel Quezon received the same impressions when he passed through Japan, it should go a long ways towards dispelling a bogey that has been frequently conjured up about Japan rushing into the islands immediately upon the withdrawal of the United States. All of the leading Japanese statesmen interviewed by Mr. Russell disclaim any desire for the islands. The denial may not be conclusive, and strategical conditions might at some future date arise that would compel Japan to adopt other views, but there can be no doubt that they faithfully and impressively reflect the views of the most responsible Japanese element.

Baron Matsui (declared): "If there were nothing else, the Philippines do not lie in the direction of Japan's development. Our experiences in Formosa have proved it. We are not a people for the tropics." Japanese failure in Formasa is, indeed, well known.

The venerable Marquis Okuma recognizes that the islands could be obtained only by force, and says that, with the lesson of imperial Germany in mind, Japan does not care to attempt any such seizure.

Others say that, even if the United States were not to be reckoned with, Japan could master the Philippines only after a long and bitter struggle with an intensely hostile population, and that Japan has no taste for any such struggle.

The most convincing statement is that of Viscount Kaneko, a graduate of Harvard. He reminds Americans that "if Japan wanted the Philippines, she could have had them long ago, cheaply and easily." In 1897, just before the Spanish-American war, Spain, weary of her long struggle with the natives, asked Japan to take them off her hands for $3,000,000. The Japanese government investigated, concluded that the islands were of no use to it, and declined the offer. "They are the same islands today," says Kaneko, "and this is the same Japan."

The evidence seems to grow stronger each day that Japan is under-going a radical change of heart, and even with the spectre of a rapidly increasing population ever before her, she is not so much concerned about immediate outlets as she is in gaining raw materials for her industries and markets for her products. Japan's problem is one of fighting for her existence, and if denied an outlet, she must struggle to obtain economic independence.

* * *

The Yellow River Bridge

A BELGIAN firm will rebuild the Yellow River Bridge, as the result of an award of the special committee of foreign experts called by the Chinese government to examine into the tenders that were formally opened at Peking on June 30th. Belgium again walks away with a great prize in competition with the rest of the industrial world. Twenty-two tenders were submitted—5 Chinese: 4 American: 3 French: 2 British: 2 Japanese: 1 Austrian: 1 Belgian: 1 German: 1 Anglo-American and 1 Franco-American. The contract goes to a combination of Belgian firms in which figure the Société d'Etudes et de Construction, the Société Belge de Chemins de Fer en Chine and the Compagnie Générale de Chemins de Fer et de Tramways en Chine, all having their head offices in Belgium, or a combination of construction companies who have great experience in Chinese engineering work, and know almost to a cent actual cost items and methods of conducting big work. They get the contract for $10,500,000. Aside from the natural patriotic impulse which must have actuated the Belgians to make every sacrifice and effort to hold their prestige in a work which they created, their success (all other things being equal), must be attributed to their familiarity with the ground and ability to meet and overcome obstacles that compels another contractor lacking their experience to make wider allowances for contingencies. On the other hand, the question of exchange gives the Belgians a distinct advantage over other competitors, especially British and Americans. At the present rate of exchange, this advantage over Americans is estimated at about forty per cent., an impossible handicap in such a competition. The same conditions gives the British manufacturer an advantage of at least twenty-five per cent. over the American, a lead that can be pulled down only by a drastic cut in the costs of production, a slash in wages, which the unionized American worker will oppose to the limit.

A novel feature of the bidding was the entrance of two Japanese concerns into the Chinese engineering field, and we find Mr. Sugahara, a civil engineer and contractor of Tokyo, tendering on Project 1 at a price of $14,972,229 and the East Asia Industrial Company, the strongest Sino-Japanese combination, entering a bid on the same project of $9,736,333, which by comparison with the others indicates close attention to details.

Another feature was the exceedingly low tender of the great British firm of bridge-builders, The Cleveland Bridge and Engineering Company, Limited, whose figure was a little over $5,000,000, or less than one-half the amount of their successful Belgian competitor. In view of the world-wide reputation and recognized ability of this representative British concern, it would seem obvious that they were not fully familiar with conditions.

The main consideration of the experts in determining the award was the design of the structure itself. Something more acceptable than the old screw pile foundation which has failed in practical application in such a shifting river bed as is found in the Hoangho. In awarding the contract, it is said that the committee were unanimous in their decision that none of the forty odd designs submitted filled the requirements and in awarding the prize and contract it was really a question of selecting the least objectionable design. Information from Peking says there is a tendency on the part of the committee to reject all the designs, and devise a new one that meets with their approval and give the contract for its erection to the successful Belgian bidder. The prize of $80,000 for the second-best design was also awarded to a Belgian concern, the Compagnie Générale d'Extrême Orient, while the prize of $25,000 for the third-best design went to the French firm of Brossard & Mopin, of Tientsin. A fourth prize of $15,000 should also have gone to this concern, but under the terms of the competition, no competitor could obtain more than one prize. Americans will be interested in knowing that Messrs. Brossard & Mopin acted for the United States Steel Corporation. The following is the official list of tenderers and prices:—

1.—John R. Freeman, Consulting Engineer, Providence, Rhode Island. (Tender incomplete. Rejected.)
2.—M. Sugahara, Civil Engineer and Contractor (Tokyo).
Projet I $14,972,229.000.
3.—W. Deydier, Ingénieur A & M. á Irc. St Gervais (Seine).
Projet I $8,462,000,00.
Variante $9,250,000,00.
4.—Union d'Entreprises Industrielles Paris (R. Th. Waagner-L. & Y. Biro et Kurez à Vienne).
Projet I $9,331,268.55.
5.—Societa Nazionale Delle Officine di Savigliano (Turin) represented par Compagnie Italienne d'Extrême-Orient (Tientsin). Projet I $8,310,249.31.
6.—M. Sidney Y. Powell, Consulting Engineer, Shanghai.
Projet I $8,709,454.50.
Projet II $9,952,648.00.
7.—Societe d'Etude et de Construction.—Société Belge de Chemins de fer en Chine. Compagnie Générale de Chemins de fer et de Tramways en Chine, Bruxelles.
Projet A $14,902,844.82.
Projet B $10,881,297.10.
8.—The East Asia Co. (Dairen)
Projet I $9,736,333.80.
9.—Cleveland Bridge and Engineering Company, Ltd.
Projet I $5,165,232.79.
10.—William Forbes & Co. for Arthur McMullen Co. and Minneapolis Steel and Machinery Co.
Projet I $12,457,137.11.
Projet IA $13,369,720.00.
Projet IB $12,818,074.55.
11.—Hugo Liu, Peking, for Lehmann & Co. of Dusseldorf.
Projet I $2,601,427.19 for supplying the steel work only.
12.—Etablissement Dayde et Schneider et Cie Paris.
Projet A $10,038,665.18.
Projet B $10,493,644.88.
Projet C $10,690,344.25.
Projet D $11,142,187.62.
Projet E $10,807,182.22.
13.—Yu Foong Industrial Development Co., Ltd. of Peking
Projet A $8,927,083.44.
Variante $8,198,693.44.
Variante $8,691,983.44.
Projet B $10,149,245.99.
Variante $9,230,995.99.
do. $9,742,555.99.
Projet C $10,428,846.64.
Variante $9,413,726.64.
do. $9,962,786.64.
Projet D $8,740,460.00.
Variante $7,579,970.00.
do. $8,336,250.00.
14.—Lam, Glines & Co. Inc., Gen. Contractors(S'hai & N.Y.)
Projet I $9,804,187.20.
15.—Etablissement Brossard and Mopin (Tientsin).
Projet I $10,846,682.60.
Variante $10,344,755.98.
Projet II $10,380,472.57.
Variante. $10,111,102.80.
Projet III $9,700,499.18.
Variante, $9,504,502.31.
16.—Chung Hsi Engineering Office, Shanghai.
Projet I. $23,018,347.93.
17.—Carlowitz & Co., Shanghai. Fried Krupp Aktiengesellschaft-Friederich Hutte of Rhunhausen (Niederrhien) and Grun and Bilfinger of Mannheim.
Projet I $9,481,944.00.
Variante $8,490,914.00.
Projet II $8,053,400.00.
Variante $7,451,180.00.
Projet III $10,786,895.00.
Variante $9,440,525.00.
18.—The Kai Cheng Engineering Co., Peking.
Projet I $14,000,000.00.
19.—Compagnie Generale d'Extreme-Orient à Paris.
Projet A $9,299,184.31.
Projet B $10,490,981.97.

American Engineering Advertising

One of the most gratifying results of the post-bellum trade campaign, is the awakening of American engineering manufacturers to the necessity of advertising in foreign technical publications, and engaging experts to supervise their expenditures. In nearly every instance where supervision over their foreign advertising has been entrusted to experts, the returns have been commensurate with the outlay. Too often, however, the manufacturer is guided by the advice of export firms whose choice of mediums is influenced by national, political or sentimental reasons. The report of the American commercial attaché at Peking on crooked advertising practices is a striking illustration of the abuses which arise when expert advice is neglected.

One of the most interesting papers read before the last foreign trade convention was prepared by Mr. A. B. Cole, director of publicity for the Westinghouse Electrical International Corporation, who supports what we have had to say on many occasions. Limitations of space alone prevent us from reproducing this most interesting document in full. He says, amongst other things:

"Many concerns have treated their foreign advertising as a side issue, and carry it as a heavy liability, owing to the lack of proper co-ordinated sales and advertising effort behind a set campaign or advertising program. A certain investment in advertising can be made to produce returns that will parallel, if not exceed, any other investment of equal amount. It can be made to—Add to sales directly add to sales indirectly, create good will for manufacturer and commodity, change living conditions, analyze markets, discover demands for products when none appear to exist, open channels of distribution, and successfully counteract resistances both active and passive."

Railway Car and Locomotive Tenders Opened at Peking

The opening of the tenders for the supply of cars and locomotives for Chinese railways, submitted in response to the advertisement of the Chinese Banking Group (who furnished the loan) took place on June 30, at Peking. The tenders were examined by a board of eleven members, five appointed by the Chinese Banking Group and six from the Ministry of Communications. Belgian manufacturers walked away with the most valuable prizes, America came in for five locomotives, while the manufacturers of other nations, Great Britain, France and Germany, failed to receive awards. The Chinese Banking Group behind the Railway Car Loan acting in accordance with the recommendations of the board which examined and awarded the contracts officially announced on July 4th the following information concerning the tenders and the names of those who received them to whom the contracts were awarded:—

Orders	Successful Bidders	Manufacturers
30 Prairie Type Locomotives for Peking-Hankow Railway	Societe Belge pour l'Exportation Industrielle	Forges Usines et Fonderies de Haine-St-Pierre Ateliers Metallurgiques Tubize Societe Franco-Belge a la Croyere, Belgium
6 English Type Locomotives for Shanghai-Hangchow-Ningpo Railway	Societe Belge pour l'Exportation Industrielle	do.
2 Mikado Type Locomotives for Peking-Suiyuan Railway	Mitsui Bussan Kaisha, Ltd.	American Locomotives Company, U. S. A.
3 Pacific Type Locomotives for Peking-Suiyuan Railway	Mitsui Bussan Kaisha, Ltd.	American Locomotives Company, U. S. A.
100 40-Metric Ton All Steel H. S. Open Wagons for Peking-Suiyuan Railway	Fearon, Daniel & Company	Compagnie Centrale de Construction à Haine-St-Pierre
100 40-Metric Ton All Steel Covered Wagons for Railway T. T. P. R.	Fearon, Daniel & Company	do.
40 40-Metric Ton All Steel Covered Wagons for Shanghai-Hangchow-Ningpo Railway	Fearon, Daniel & Company	do.

I.—Thirty Prairie Type Locomotives for Peking-Hankow Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
1 Fu-Hsing Trading Co.	Hohenzellern Work for Locos., Germany	G. $50,000
2 Arnhold Bro. & Co., Ltd.	Messrs. Beyer Peacock & Co., Ltd., England	£13,647
3 Andersen, Meyer & Co., Ltd.	Baldwin Loco. Works, U. S. A.	U. S. Gold $52,500
4 Andersen, Meyer & Co., Ltd.	Baldwin Loco. Works, U. S. A.	U. S. Gold $51,000
5 Nicholas Tsu Engineering Works	Messrs. Schneider & Co., France	French Francs 18,962,620
6 Shewan, Tomes & Co.	W. G. Armstrong, England	£18,732 for 30 £19,040 for 15 £19,750 for 5
7 Carlowitz & Co., Tientsin	Henschel and Sohn, Cassel, Germany	G. $49,955
8 Han Yung Co., Shanghai	Humbolt, Cologne and Borsig, Germany	G. $51,900
9 Czecho-slovak Central Economic Commission, Shanghai	German Works' name to be given later	G. $57,000
10 Jardine, Matheson & Co., Ltd.	Lima Loco. Co., U. S. A.	G. $44,700 Total 1,341,000
11 Wah Chang Trading Corp., S'hai	Vulcan Iron Works, U.S.A.	G. $47,600 Total 1,428,000
12 Wah Chang Trading Corporation	Lima Loco. Co., U. S. A.	G. $47,000 Total 1,410,000
13 Charles Ley, Peking	Haine St. Pierre Ateliers Metallurgiques or Societe Franco-Belge	Belg. Francs 464,500
14 Jardine, Matheson & Co., Ltd.	The North British Loco. Co., Ltd., Glasgow	£15,667
15 Jardine, Matheson & Co., Ltd.	Lima Loco. Co., U. S. A.	G. $60,248
16 Norway-China Trading Co.	Linke Hofmann-Works, Breslau, Breslau, Germany	G. $49,215
17 Central Trading Co., Ltd.	The Great Union of German Loco. Works, Germany. "The Specific Name" of the manufacture selected out of this Union for the order to be given in a few days	G. $51,895

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
18 The Robert Dollar Co., Peking	The Vulcan Iron Works, U. S. A.	G. $50,365
19 Representations Industrielles Belges, Peking	Waiting for Cable advice for Belgium	Belg. Francs 475,800
20 Fearon, Daniel Co., Inc.,Shanghai	Engine Societe Energic Charleroi, Belgium	Engine Belgian Francs 409,200
	Tender Hame - Saint - Pierre, Belgium	Tender Belg. Francs 56,055
21 Banque Sino-Francaise, Tientsin	Schneider & Co., France	French Francs 18,962,620
22 Representation for British Manufacturers, Ltd.	Forth Banks Loco. Works, England	£13,700
23 Societe Belge pour l'Exportation Industrielle, Peking	Haine St. Pierre Ateliers Metallurgique Societe Franco-Belge, Belgium	Belg. Francs 410,000
24 Societe Belge pour L'exportation Industrielle, Peking	do.	Belg. Francs 452,550
25 The East Asia Industrial Co., Ltd., Tokyo	Kawasaki Dockyard Co., Kei Sha Seizo Kabushiki Kaisha, Japan	Yen 85,000
26 Wah Chang Trading Corporation, Shanghai	Lima Loco. Co., U. S. A.	G. $52,000
27 Mitsui BussanKaisha, Ltd., Tientsin	American Loco. Co., U. S. A.	G. $44,200
28 Associated Brass and Copper Manufacturers of Great Britain, Ltd., Shanghai	Vulcan Foundry Co., Ltd., England	£13,075 c.i.f. Liverpool

II.—Tenders for Six English Type Locomotives for Shanghai-Hangchow-Ningpo Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
1 Fu-Hsing Trading Co.	Hohenzollern Works for Loco., Germany	G. 48,000 each $13,-500 spare parts per set $61,500 Local Currency and spare part.
2 Arnhold Bros. & Co., Ltd., Peking	Beyer Peacock & Co., Ltd., England	£17,280 each
3 J. Whittall & Co., Ltd., Peking	North British Loco. Co., Ltd., Glasgow	£13,500 each
4 Carlowitz & Co, Tientsin	Henschel and Sohn, Cassel, Germany	Gold $48,700 each
5 Jardine, Matheson & Co., Ltd., Shanghai	North British Loco. Co., Ltd., Glasgow	£14,133 each
6 Charles Ley, Peking	Forges Usines et Fonderies de Haine St. Pierre 3, Manufacturers given. Belgium	467,000 each. Belgian Francs.
7 l'Exportation Industrielle, Peking	(1) Forges Usines et Fonderies de Haine St. Pierre; (2) Ateliers Metallurgiques a Tubize;(3) Societe Franco-Belge de Materiel de Chenim defer à La Croyeres	412,000 each (duty excluded) Belgian Francs 434,660 (duty and famine surtax included)
8 Norway-China Trading Co.	Linke Hofmann Works	G. $47,530 each $13,-260 per set of spare parts
9 Czecho-slovak Central Economic Commission, Shanghai	German Makers, no particular Manufacturer given	G. $56,000 each
10 Representations Industrielle Belges, Peking	Belgian Maker	Belg. Francs 478,100 each
11 Han Yang Company, Shanghai	Humbolt Cologne and Borsig of Berlin, Germany	G. $51,000
12 Representation for British Manufacturers, Peking	R. & W. Hawthorn, Leslie Co., England	£11,000 each £4,500 spare parts
13 Central Trading Co., Peking	The Great Union of German Loco. Works. No name given. Germany	U. S. G $64,735 each
14 Mitsui Bussan Kaisha Ltd., Tientsin	American Loco. Co., U. S. A.	G. $40,530 each $14,-000 spare parts $2,200 per set of trading

III.—Tenders for Two Mikado Type Locomotives for Peking-Suiyuan Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
1 The East Asia Industrial Co., Ltd.	Kawasaki Dockyard Co., Ltd., Kobe	Yen 100,000
2 Carlowitz & Co., Tientsin	Henschel and Sohn, Germany	Gold $59,225
3 Andersen, Meyer & Co.	Baldwin	Gold $52,500
4 Norway-China Trading Co., Tientsin	Linke Hofmann Works, Breslau, Germany	Gold $56,350
5 Han Yung Co., Shanghai	Humbolt Cologne and Borsig of Berlin	Gold $61,500
6 Fu-Hsing Co., Tientsin	Hohenzollern Works, Germany	Gold $57,000
7 Charles Ley, Peking	Haine - St. - Pierre Ateliers M'clally a Tubize Soc. Franco-Belge, Belgium	Belg. Francs 589,800
8 Czecho-slovak Central Economic Commission, Shanghai	German Engine Works of best repute	Gold $60,500
9 Jardine, Matheson & Co., Ltd.	Lima Loco. Works	Gold $66,520
10 Hwa Fa Trading Co.	Orenstein and Koppel Berlin	Gold $64,000

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
11 Societe Belge pour l'Exportation Industrielle	Haine - St. - Pierre Ateliers Metall. at Tubize Soc. Franco-Belge, Belgium	Belg. Francs 548,600
12 Robert Dollar Co.	Vulcan Iron Works or Wilkes-Barre, Pems, U. S. A.	G. $54,550 each
13 Representation of British Mftrs.,Ltd.	Forth Banks Loco. Works, Newcastle-upon-Tyne	£17,000 each
14 Central Trading Co., Peking	Great Union of German Loc. Works, Germany	U. S. Gold $60,990
15 Arnhold Brothers & Co., Ltd.	Beyer Peacock & Co., England	£14,904 each
16 Wah Chang Trading Corporation, Shanghai	Lima Loc.	U. S. Gold 68,970 each
17 Wah Chang Trading Corporation	Alternative Mikado by Vulcan Iron Works	U. S. Gold 53,660 each
18 Representation Industrielle Belge	do.	Belg. Francs 603,000
19 Mitsui Bussan Kaisha	American Loc. Works	G. $52,000

IV.—Tenders for Three Pacific Type Locomotives for Peking-Suiyuan Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
1 Central Trading Co.	Great Union of Engineering Locomotive Works	U. S. Gold $58,636
2 Carlowitz & Co.	Henschel and Sohn, Cassel	Gold $56,400
3 Czecho-slovakCentral Economic Commission	German Makers. Name to be given later	G. $65,000
4 Charles Ley	Haine - St. - Pierre Ateliers Metellurgique Societe Franco-Belge	Belg. Francs 584,000
5 Norway-China Trading Co.	Linke - Hofmann Works	G. $53,940
6 Fu Hsing Trading Co.	Hohenzollern Locomotive Works	G. $55,000
7 East Asia Industrial Co.	Kisha Seizo Kabushiki Kaisha,Osaka	Total Yen 282,000 (94,000 each)
8 do.	do	Total Yen 237,000 (79,000 each)
9 Andersen, Meyer & Co.	Baldwin Works	G. $50,900
10 Wah Chang Trading Co.	Lima	G. $60,880
11 do.	Vulcan Iron Works	Gold $52,190
12 Han Yung Co.	Humbolt and Borsig	Gold $58,500
13 Jardine, Matheson & Co., Ltd.	Lima Works	Gold 58,355
14 Representative for British Manufacturers	Hawthorn, Leslie & Co.	£16,500
15 Arnhold Brothers & Co.	Beyer Peacock	£14,310
16 Robert Dollar Co.	Vulcan Iron Works	Gold 53,680,000
17 Societe Belge pour l'Exportation Industrielle	Haine - St. - Pierre Ateliers Metallurgique Soc. Franco-Belge	Belg.Francs 515,000

V.—Tenders for 100 40-Metric Ton All Steel U.S. Open Wagons for Peking-Suiyuan Railway

Names of Tenderers.	Names of Manufacturers	Prices as quoted
1 Yu Foong Industrial Development Co.	Haseluirenfabrik Augsburg Nurnberg	£882 each
2 Shingming Trading Co.	Compagnie Central de Construction at Haine-Saint-Pierre, Belgium	B. F. Frs. 28,905 discounted B. F. 30,443 Francs mounted each
3 Harrisons, King and Irwin	The National Steel Car Corporation	Gold $2,572 each
4 Yangtze Engineering Works	Yangtze Engineering Works	Hankow Tls. 9,200 each
5 Representation Industrielles Belges	Of Belgian manufacture, no makers' name	B. F. 35,600 each
6 Hwa Fa Trading Company	The Dortmond Union and the Orenstein and Koppel A. G. F., Berlin	£88,614 each
7 Arnhold Brothers & Company	Metropolitan Car, Wagon and Finance Co., Belgian Works	B. F. 33,919 each
8 Arnhold Brothers & Company	Lorraine Dietriech, France	F. F. 44,371 each
9 Arnhold Brothers & Company	Metropolitan Car, Wagon and Finance Company Birmingham, England	£12,431 each
10 Reiss & Company	Chickasaw Car Company	Gold $3,132 each
do.	do.	Using Schoen Steel Wheel G. $240, Reduced
11 J. Whittall & Company	National Steel Car Corporation, U. S. A.	Gold $2,550 each
12 Jardine, Matheson & Company	The Metropolitan Carriage, Wagon and Finance Co., Belgian Works	B. F. 36,282 each
13 Jardine, Matheson & Company	Merchants' Despatch Company, N.Y.	Gold $ 3,533 each
14 Robert Dollar Company	American Car and Foundry Company	Gold $3,075 each
15 Fearon, Daniel & Company	Compangne Central de Construction, Haine-Saint-Pierre, Belgium	B. F. 31,325 each

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
16 Societe Belge Pour l'Exportation Industrielle	Ateliers du Roenix Roenix, Belgium	B. F. 30,530 each B. F. 32,215 each
17 Yu Foong Industrial Development Co.	Union, Dortmond and Orenstien and Koppel, Berlin	£838 each
18 East Asia Industrial Co.	Kawasaki Dockyard Co., Kisha Seizo and Nihon Sharyo Seizo Kaboshiki Kaisha	Y. 6,000
19 General American Car Company	General American Car Company	Gold $3,025 each
20 Fu Chung Corporation	Messrs. Hurst Nelson & Co.	£1,340,000 each
21 Wah Chang Trading Corporation	Magor Car Corporation	Gold $2,891 each
22 Fu-Hsing Trading Co.	I Harkort Duisburg Germany	£ Stel. 625 each
23 Carlowitz & Co.	Firm of Hannoversche, Maschinenbau and Wagon Fabrik, Hannover	7,323 Chinese Dollar each
24 Norway-China Trading Co.	Aktien Gesellschaft fuer Eisen-Industrie en Bruckenbau. Vormals J. C. Harkort Duisburg, Germany	£ Stel. 612 each
25 Charles Ley	Le Ateliers du Roenix, Belgium	B. F. 34,500 each
26 Dowler, Forbes & Co.	Kilbourne and Jacobs Manufacturing Company, Columbus, Ohio, U.S.A.	Gold $3,150 each
27 Andersen, Meyer & Co.	Middletown Car Co., U.S.A.	Gold $289,000 total
28 Representation for British Manufacturers Limited	Cravens Railway Carriage and Wagon Co of Sheffield, England	£10,16,000 each
29 Williams, Forbes & Co.	Pressed Steel Car Company, U. S. A.	Gold $3,095 each
30 Cie - Gen - d' Extreme Orient	do.	Frs. 60,000 each
31 Mitsui Bussan Kaisha	Pennsylvania Car Co.	Gold $2,750
32 do.	American Car and Foundry Co.	Gold $2,826,000
33 Associated Brass and Copper Manufacturers	Birmingham Ry Carriage and Wagon Co.	£1,085
34 Hua Hsing Trading Co.	Midland Car Co. Standard Car and Equipment Co.	Gold $3,605.24
35 do.	do.	Gold $2,995

VI.—Tenders for 100 40-Metric Ton All Steel Covered Wagons for Tientsin-Pukow Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted.
1 Harrisons, King and Irwin, Ltd.	The National Steel Car Corporation. Sandberg Works, New Jersey U.S.A. also Hamilton Ontario, Canada	Gold $2,908 each
2 Norsk Chinesisk Handels—A/S Filial, Tientsin	Aktien Gesellschaft fuer Eisen-Industrie en Bruckenbau. Vormals J. C. Harkort Duisburg, Germany	£673 each
3 Arnhold Brothers & Co., Ltd.	The Lorraine Dietrich, Ltd., France	French Frs. 49,559 each
4 Arnhold Brothers & Co., Ltd.	The Metropolitan Car, Wagon and Finance Co., Ltd., Birmingham, England	£1,410 each
5 Arnhold Brothers & Co., Ltd.	The Metropolitan Car, Wagon and Finance Co., Ltd., Belgium	Belgium Frs. 39,108 each
6 Whitall & Co., Ltd.	The National Steel Car Corporation, U.S.A.	G. $2,620 each, C. I. F. Pukow
7 Jardine, Matheson & Co., Ltd.	Metropolitan, Carriage, Wagon and Finance Co., Ltd., Belgian Works	Belgian Frs. 44,415 each, C. I. F. Pukow, including import duty and dues
8 Jardine, Matheson & Co., Ltd.	Merchants' Despatch Co., A Subsidiary of the New York Central Railway Co., New York	Gold $3,842 each, C. I. F. Pukow, including import duty and dues
9 Arnhold Brothers & Co., Ltd.	Lorraine Dietrich, Ltd., France	French Frs. 49,559 each
10 Carlowitz & Co.	Hannoversche Maschinenbau and Wagon Fabrik, Hannover	Chinese Dollars 8,-937 each
11 The Robert Dollar Co.	The American Car and Foundry Co., U.S.A.	G. $3,323 each C. I. F. Pukow
12 The Robert Dollar Co.	The American Car and Foundry Co., U.S.A.	G. $3,410 each C. I. F. Hsinho
13 Societe Belge pour l'Exportation Industrielle	Ateliers de Roenix a Roenix, Belgium	Belgian Frs. 34,645 each C. I. F. Pukow, Custom's duty for account of the Tientsin - Pukow Railway
14 Reiss & Company	Chickasaw Car Company	G. $3,259 each G. $3,019 each if steel solid wheel be used.
15 Fu Hsing Trading Co.	T. Harkort Duisburg, Germany	£685 each not including duty or dues in China

Names of Tenderers.	Names of Manufacturers	Prices as quoted
16 Dowler, Forbes & Co. (China) Ltd.	The Kilbourne and Jacobs Manufacturing Co., Columbus, Ohio	G. $3,470 each including duties delivering at wharf special by the Railway later. If no duty G. $250 may be deducted making the price at G. $3,220 each
17 Andersen, Meyer & Co., Ltd.	Middletown Car Co.	G. $3,158 each
18 Leon Hoyaux Representations Industrielles Belges	Belgian Manufacture. Name not stated	Belgian Frs. 40,300 C. I. F. Pukow
19 The Shingming Trading Co., China	Compagnie Central de Construction at Haine-St.-Pierre, Belgium	Belgium Frs. 30,955 each. If frame may be shipped dismounted Belgium Frs. 32,493 each if frames are shipped mounted
20 Associated Brass and Copper Manufactures of Great Britain	Birmingham Railway Carriage and Wagon Co., Ltd. Birmingham, England	£1,160 each C. I. F. Shanghai Hankow and Hsinho
21 Fu Chung Corporation	Hurst Nelson & Co. Motherwell, Scotland	£1,470 each
22 The Yangtsze Engineering Works, Ltd.	The Yangtsze Engineering Works Ltd.	Hankow £9,800 each
23 Charles Ley	Les Ateliers du Roenix, Roenix, Belgium	Belg. Francs 38,150 per piece delivered C. I. F. at Pukow
24 Fearon, Daniel & Co.	Compagnie Central de Constructions Haine-Saint-Pierre, Belgium	Belgium Francs 33,965 C.F.E. duty paid
25 Wah Chang Trading Corporation	Magor Car Corporation, Passaic H. T., U. S. A.	Gold $3,230
26 Shewan, Tomes & Co.	Metropolitan Carriage Wagon and Finance Co., Ltd. at their works at Birmingham or Wednesbury or Manchester, England	£1,383 each for 100 wagons; £1,416 each for 50 wagons; £1,450 each for 25 wagons. Delivered at Pukow
27 Williams Forbes & Co.	Pressed Steel Car Co.	Gold $3,479
28 Mitsui Bussan Kaisha, Ltd.	Pennsylvania Car Co	Gold $2,833
29 Mitsui Bussan Kaisha, Ltd.	American Car and Foundry Co.	Gold $3,313 Gold $3,313
30 Hua Shen Trading Co.	Midland Car Co. or Standard Car and Equipment Co. or Mount Vernon Car Co.	Gold $3,984.76 each
31 Hwa Fa Trading Co.	The Dortmund Union and the Orenstein and Koppel A. G. of Berlin	£1,044/5
32 Yu Foong Industrial Development Company, Ltd.	Machinenfabrik-Augsburg - Nurnburg	£1,044/6
33 Yu Foong Industrial Development Company Ltd.	Union, Dortmund and Orenstein and Koppel, Berlin	

VII.—Tenders for Fourteen 40-Metric Ton All Steel Covered Wagons for Shanghai-Hangchow-Ningpo Railway

Names of Tenderers.	Names of Manufacturers.	Prices as quoted
1 Representation for British Manufactureres	Craven Ry Carriage and Wagon Company Ltd. Sheffield	£1,205 for 40 cars only; if 140 cars price for each cars £1,192
2 Representation Industrielle Belge	Belgian Manufacturers	Belgian Fcs. 40,300
3 Norway China Trading Company Ltd.	Aktien - Gesellschaft Eisen - Industrie and Brucchen ban Duisbury	£673
4 J. Whittall & Co.	The National Steel Car Corporation U. S. A.	G. $2,785
5 Fu-Hsing Trading Co.	T. Harkort. Duisbury, Germany	£685
6 Societe Belge pour l'Exportation Industrielle	Ateliers de Roenix a Rollenix Belgium	Belgian francs 33,645
7 William Forbes & Co.	Pressed Steel Car Co., Pittsburg	Gold $3,745 for 40 Cars; if 140 Cars Gold $3,479
8 Fearon, Daniel & Co.	Haine - St. - Pierre, Belgium	Belgian Francs 33,965
9 Wah Chang Trading Co.	Magor Car Corporation of Hamilton	Gold $3,230
10 Dowler, Forbes & Co.	Kilbourne and Jacobs, U.S.A.	Gold $3,470
11 Robert Dollar	American Car and Foundry, U.S.A.	Gold $3,255
12 Shingming Trading Co.	Haine - St. - Pierre, Belgium	Belgium Francs 30,955 frame dismounted
13 Associated Brass and Copper Manufactures of Great Britain	Birmingham Ry Carriage and Wagon Co., England	£1,160
14 Yangtsze Engineering Works, Hankow	do.	Hankow Taels 9,800
15 Arnhold Bros. & Co.	Metropolitan Car Wagon and Finance Co., Belgium	B. F. 39,108
	Metropolitan Car Wagon and Finance Co., England	£1,410

Names of Tenderers.	Names of Manufacturers	Prices as quoted
16 Yu Chung Corporation	Hurst Nelson and Co.	£1,470
17 Harrisons, King & Irwin	National and Car Corporation, U.S.A.	G. $3,089
18 General Am. Car Co.	General American Car Co., Chicago, Md., U.S.A.	U.S.G. $3,300 per car if no duty or dues reduced to $3,085
19 Carlowitz & Co., Peking	Hannoversche Maschinenbau waggon Fabrik, Hanover, Germany	Chinese dollar $8,575 per piece provided $ 1=3 mks. $7.80 =£1
20 Andersen, Meyer & Co., Peking	Middletown Co., Penn., U.S.A.	U.S.G. 126,350
21 Shewan, Tomes & Company, Agent of Samuel & Co.	Metropolitan Carriage Wagon and Finance Company England	£1,411 per wagon
22 Charles Ley	Les Ateliers du Roenix, Le Roenix, Belgium	Belgium Francs 38,150
23 Jardine, Matheson & Company Ltd., Shanghai	Metropolitan Carriage Wagon and Finance Co. Ltd. Works, England	£1,510
24 Reiss & Company	Chickesaw Car Co.	U.S. $3,422
25 Jardine, Matheson & Co., Ltd., Shanghai	Metropolitan Finance Carriage, Company Ltd, Belgian Works	Belgian Francs 48,397
26 Jardine, Matheson & Co., Ltd., Shanghai	Merchants Despatch Co.	G. $4,183
27 Mitsui & Co.	Pennsylvania Car Co.	G. $2,833
	American Car and Foundry	G. $3,319
28 Yu Foong Industrial Development Co.	Mashinen fabrik Augsburg Nurnberg.	£971
29 Hua Shen Trading Co.	No makers' name	G. $3,984
30 Hua Sheng Trading Co.	No makers' name	G. $3,386 each

The Tien Pao Coal Colliery

So little information on Chinese-owned mines is available that when details are obtained they are of particular value. It is not likely that many have heard of the Tien Pao Coal Colliery situated as Hsiang-tan-hsien, Honan. This is a spot about 160 *li* away from Changsha, half a *li* from the Hsiang River and two *li* from the projected Canton-Hankow Railway. To reach it by water 90 *li* must be traversed from Chuchow, 150 *li* from Hsiang-tan city and 240 *li* from Changsha. When discontented soldiery and other pirates are not in evidence, a regular steam launch service plies between Changsha and Hengchow which lands passengers at a place called Chong-shu-ma-tou where an inn of sorts is, the property of the mining administration, is ready to render such hospitality as is possible. In the winter when the depth of the waterways do not permit of steam launch penetration a visitor from Changsha may take the Changsha-Chuchow railway to Chuchow and from this last mentioned place he will be able to reach the colliery by shallow drafted chinese junk in about two days time. All steam launches carry cargo during the spring, summer and autumn: and in the winter the shallow drafted junks each carry about ten tons per trip. The cost of transporting coal from the colliery to these boats is Mex. $0.27 per ton.

The colliery was first registered with the ministry of agriculture in May 1917 by Mr. Li Kuan-li who obtained permission to operate on land covering an area of 342 Chinese acres. Later this gentleman was given permission to extend the colliery's operations over an area of 2264 *mow*, making in all an area of a little more than five square miles.

It is stated that the deposit of coal formed on the banks of the Hsiang-kiang river during the permo-carboniferous period. The presence of carboniferous limestone at the Tien Pao mine is stated to prove this. The basin of coal on which the Tien Pao colliery is situated is 30 Chinese feet thick, running northward 110° E. and inclining at 45°. The length of the basin has been proved to be 9 *li* and its depth as estimated by the natives is 1,500 Chinese feet. With these figures to work on it is estimated that there are about 28,000,000 tons of coal in the deposit.

There are four shafts in all from which coal is hauled to the surface. The first shaft is worked with modern appliances from abroad, while Chinese methods form the means of excavation work in the other shafts. There are eight seams of coal through which the first shaft passes in its depth of 242 feet but only three of these have proved worth operating on. The irregularity in the distribution of coal often causes disappointment, a three-foot seam often dwindling to a one foot thickness which is hardly profitable to work upon. In the second shaft there are three seams two of which have been cut into. Here the seams range from two to three feet in thickness. There is only one seam in the fourth shaft but as yet this has not been touched.

The coal that is mined is bituminous, hard, black, does not stain and is suitable for use in refineries. Its chemical composition is as follows:

Water 1.4, carbon 72.3, volatile substance 18.5, ash 7.6 and sulphur 1.62.

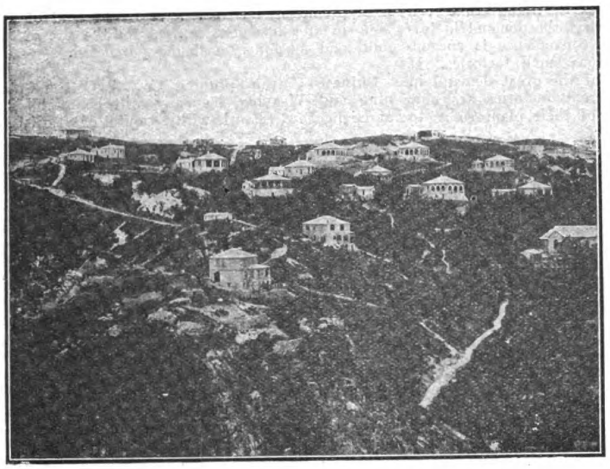
As regards labor, men who work 8 hours a day can be obtained, with difficulty, at a wage of Mex. $0.30 or Mex. $0.40 per day. These are first class workers but for less efficient workmen the wage paid is Mex. $0.26 per day, and for boys on less strenuous work Mex. $0.20 per day.

The Tien Pao Coal Colliery is capitalized at Mex. $100,000 with four-fifths of the capital paid up. Much of this has been lost as a consequence of military operations in the district during the frequent civil disruptions that occur in China from time to time. Money is at a low ebb with the concern at the present time and it is said that they do not expect even foreign aid in that direction. Money is also owed on loans so that unless the organization is able to put its financial affairs in proper order its future is far from bright.

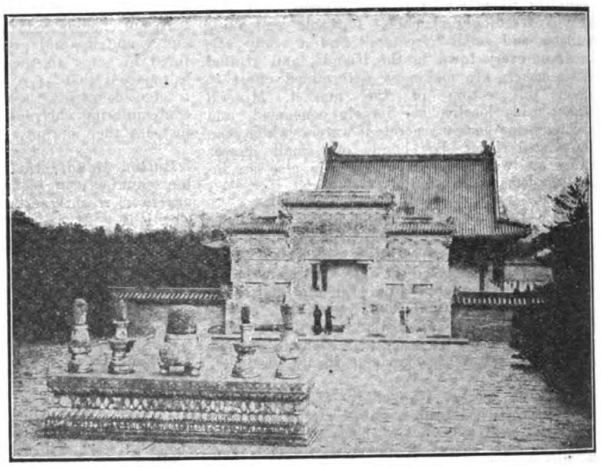
Great difficulty is being experienced in getting sufficient air into the shafts, the 12-foot fan at present in use only forcing air to a depth of a little over one hundred feet. Up to the time when they opened the third pit only about 1,700 tons of coal had been brought to the surface from the other shafts. In the third shaft was found a good coal seam but floods and other difficulties prevent a reasonable excavation. Pumps and other modern mining contrivances are badly needed.

From what can be gathered there is a good supply of coal in the vicinity and if the Tien Pao Coal Colliery could be operated on modern Western lines, and under foreign supervision, there does not seem to be any doubt but what reasonable profits could be gained.

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

From the Capital to Hankow the journey about 30 hours by the bi-weekly "Express" through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Reservations, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

Telegraphic Address: "KINCO" **Codes: A.B.C. 5th Edition** **Telephone East 1698**

Cement Material at Chinkiang.—The earth at Changshan and Kaotze, Chinkiang, possessing peculiar features, is very suitable for manufacturing cement, earthenware made from it being able to stand rough wear. The Shanghai Cement Works at Kiangnan Arsenal has sent an expert to that locality to make a thorough investigation of the material, and experiments show that the peculiar earth can manufacture a product superior to any other brand now in the market.

Tungsten Monopoly, Kiangsi.—The government has decided to monopolise the tungsten output of Kiangsi. Merchants will do the prospecting on behalf of the government and the output will be disposed of officially. Wolfram deposits have been found in Chihli, Hunan, Kiangsi, Fukien and Kwangtung. The mineral is largely worked in the following districts of Kiangsi: Tsungyi, Tayu, Nankang, and Shangyiu.—The tungsten resources of China are more or less a matter of speculation, says the bureau of economic information.

Gold Mines Discovered, Fukien.—A gold mine covering a large area has been lately discovered at Tung-chee of Kien-er-hsien, Fukien. The deposits are found to be very fine in quality, and Mr. Liu Chung Lung has organized The Wei Ming Mining Association to undertake to exploit these mines. Two mining areas have been fixed and a survey is being made.

Shaoshing Coal Mine.—A coal deposit has been located in a hilly section of the country near Shaoshing recently. The coal is said to be of a high quality and the supply capable of withstanding eighty years of ordinary mining without exhaustion. Foreign and Chinese capitalists, including the owner of the district, have organized a company, known as the Tse Chen Mining Company, to develop the property with a capitalization of $1,000,000. The property will be opened up within a short time.

Tze-Shan Coal Mining Co.—Messrs. Shao Aulan, Chiang Yue-chien and Chao Ling-sung have established the Tze-Shan Coal Mining Co. with its Shanghai office at West Gate and it Nanking office at Ki-ziang street and with its engineering department at Lung-dai-chen. The Company will open coal mines at Shih-kar-kiang near Feng-dai village in Che-yung-hsien, Kiangsu. The coal has been found very good, containing very little impurities.

Chinese Coal Popular in South Seas.—According to those who have returned from the South Seas, a great market in that part of the globe, is offered for Chinese coal on account of the ever increasing number of factories and industrial enterprises. Those factories that are managed and financed by Chinese are desirous of using coal imported from China. More than 70,000 tons of Chinese coal are said to have been imported from China since the beginning of this year while orders for more are being placed. Telegraphic news states that the coal already received will not be sufficient to last six months and agents have already been sent to Shanghai and Canton to purchase more, principally from the provinces of Kwangtung, Shantung and Chihli.

OILS

Japanese Kerosene Oil Production.—The following gives the yield (in thousands of *koku*) of kerosene oil in Japan for the past four years, based on an investigation made by the department of agriculture and commerce:—

Kind.	1917.	1918	1919.	1920.
Crude oil	2,600	2,235	2,072	2,084
Naphtha	125	147	148	146
Lighting oil	456	398	244	185
Light oil	615	656	580	615
Lubricating oil ...	353	347	366	390
Heavy oil	549	332	198	185

Crude oil includes natural gas. The above figures show that the output of kerosene oil in Japan has decreased year by year.—*Reuter's Trade Service.*

Oil Tanks, Kowloon.—Four large oil-tanks are being constructed at the Kowloon naval depôt. It is expected that it will take several months to complete the work, which involves the laying of oil-pipes and other facilities for the conveyance of oil aboard naval vessels.

New Petroleum Island.—The Netherlands Colonial Petroleum Company have requested permission from the government to explore Obi Major, an island situated in the Batjan archipelago.

Company Amalgamation.—The Asahi Petroleum Co. has amalgamated with the Yushui Petroleum Co., capital of the new company will be Y.10,500,000.

The Standard Grease Company was organized recently with a capital of Y.1,500,000, one-half paid up to manufacture grease and substances for soap manufacture. Office: 2140 Toyoshima, Ojimachi, Tokyo-fu. Manager: Mr. Y. Nagasaki.

The Sun Petroleum Co., Ltd. is discussing the advisibility of boring at Terahaku, Ichiga province.

Japanese Oil Activities.—The Japan Petroleum Co. and the Hoden Petroleum Co., with twelve others, are now considering establishing a sales agency with a capital of Y.1,000,000 to prevent sales at cheap prices by dealers or jobbers. This plan will probably be carried out in the near future.

There are rumors of the amalgamation of the Japan Petroleum Company, capital Y.40,000,000 ($20,000,000), and the Hoden Petroleum Company, capital Y.20,000,000.

PUBLIC WORKS

Public Works in the Philippine Islands in 1920.—A total sum of $9,764,807 was spent on Philippine public works during the year 1920, compared with $8,905,645 in 1919, states the publication of the Philippine government commercial agency. This sum was spent for road construction and repair, including 198 kilometres of new roads; bridges; public buildings, including 12 markets and 47 schools; waterworks and irrigation systems, designed to benefit 300,000 hectares of agricultural land when completed in about 10 years; and extensive port improvements, providing deeper anchorages for the different ports in the islands. Artesian wells were drilled during the year at a total cost of $524,863, the 1,204 wells now in operation supplying more than 365,000 inhabitants of the islands with water.

Public Works at Changchow.—At the last meeting of the chamber of commerce of Changchow, Kiangsu, the following items regarding public works were discussed and decided upon:—

(1) That the city wall of Changchow should be repaired.

(2) That a large well should be dug to give water supply to the public.

(3) That the construction of the Tien Shee Bridge should immediately commence by asking the public for subscriptions.

RAILWAYS

New Railway Construction, Sumatra.—Surveying has been commenced in connection with the Sibolga-Batang-Toro line, and construction work will shortly be started. Reports were recently received of the surveys of territory through which will run the lines linking together the West, East and South coast of Sumatra. Under these provision is made for a line running across the island, the route lying through the Kwantan, Korintji and Indragiri districts to Tembilahan, where a new harbor is under construction, the main line sending feeders into all the surrounding agricultural districts. Railways will also serve the coal and oil centres, the south of the island, being carried through Padanag Tarap.

Peking-Mukden Rail Loan.—The loan for laying the double track on part of the Peking-Mukden line has been signed. The loan which is named partly in Peking currency and partly in British pounds, totals $2,000,000 and bears 8 per cent. interest. Interest only will be paid the first year and after that the principal will be paid in installments. The securities are the bonds of the Peking-Mukden, Shanghai-Hankow and Hu Feng Railroad lines. The first bear 5 per cent. and the last 6 per cent. interest. The government is to secure any amount not deemed to be sufficiently covered by these securities.

Suiyuan-Paotowcheng Branch Line of Peking-Suiyuan Railway.—Mr. Chow Tun-kao requests that the projected Suiyuan-Paotowcheng branch line of the Peking-Suiyuan Railway should run through Tok-hsien and Towu.

New Equipment, S.N.R., has purchased 4 locomotives and 40 freight cars.

Electrical Signals, Peking-Suiyuan Line.—The electrical signals installed on the Nankow-Kongchong section of the Peking-Suiyuan line having proved satisfactory, it is proposed to instal 64 more sets on this line.

Extension of Peking-Suiyuan Railway.—The ministry of communications has ratified the contract to supply the steel rails and sleepers by Robert Dollar & Co. for the lengthening of Peking-Suiyuan Railway to Paotoutsung.

Tzeliutsing-Fuchenhsien Railway Will Resume Construction.—The railway line from Tzeliutsing to Euchenhsien, Szechuan, proposed by Mr. Liu Yen-tseng, a native of Fuchenhsien, is a very important line, though rather short in distance; for it is indispensable to the development of salt enterprise at Tzeliutsing. After approval by the ministry of communications in 1918, the construction was delayed owing to the military disturbances in the locality.

In the meantime, another railway from Tzeliutsing to Duntsingkwan has been built with Chinese and foreign money. Mr. Liu Teh-ling, the son of Mr. Liu Yen-tseng, has decided to continue the work and a preparatory office has been established at Yu-hsien, Szechuan.

Canton-Kongmoon Railway Proposed.—Some enthusiastic merchants said to have organized a company for the construction of a railway connecting Canton and Kongmoon, petitioned the local authorities for registration. In reply the local authorities instructed the newly organized company to supply the government with maps, detailed surveys, estimates, the capital of the company and other information before proper registration, can be made.

New Issue is Announced: Japan.—Yesterday the Japanese government announced a new issue of 5 per cent. exchequer notes to the extent of Y.11,479,300, which are of denominations ranging between Y.25 and Y.10,000. The new notes were, however, issued to the deposit section of the treasury, the general investment public have not been asked to subscribe.

This issue was planned by the Japanese government for the financing of the railway department and the government general of Formosa pushing forward their works. The rate of interest is 5 per cent. per annum, but the net price at which the issue is turned over to the deposit section is 93 per cent. This issue will be redeemed June 1, 1929.

At the close of this month Y.20,000,000 of treasury bills fall due. They will not be redeemed in cash, as it is stated. But they will be reissued in some form other than treasury bills.

Work of Sze-Tiao Railway, Fengtien.—According to report, the laying of rails on the Cheng-Pah section on the Sze-Tiao line of Fengtien was commenced on July 1st, 1921.

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Japanese Loans for Railways.—According to the *Chen Pao*, secret negotiations are being carried on between certain officials and the Japanese lenders for the signature of a formal agreement for the Kao-Hsu and Shun-Tsi Railways Loan. Japan is willing to give China another sum of Y.20,000,000, thus making up the loan to the amount of Y.40,000,000. China is going to give adequate security for the loan and to sign a proper agreement for the sum.

Another loan agreement has already been signed. Some time ago, on payment of an advance of $10,000,000, Japan was given the rights of construction on the Kirin-Huining Railway. The total amount of the loan is $25,000,000, and the net proceeds are 92 per cent. The commission is $1,200,000.

Yet another loan is under negotiation. Since the end of the late Ching Dynasty Japan has been anxious to obtain the franchise for the construction of the Tienpaoshan-Tumenchiang Railway, a line of 400 *li*, and an important branch for the South Manchuria Railway. Recently Mr. Ya-chun-lung-mu-lan, chairman of the South Manchuria Railway, arrived in Peking, but he has now left the capital with a permit for the construction of the line.

Tenders Invited.—Tenders are invited for the construction of quarters for four foreign tide-waiters at Newchwang for the Chinese maritime customs. Specification, form of agreement, and plans may be seen on application to the harbor master at Newchwang, on payment of Mex. $50 which will be returned on receipt of a bona fide tender.

New Engineers for Track Work.—The *N. C. D. Mail* states that it is reported that four engineers have arrived for the P. M. Railway in connection with doubling the track from Tongshan to Chinwangtao.

An Electric Line.—The government has given its sanction to the building of an electric railway between Hirano-go, Osaka, and Kashiwabara, Osaka, by the Nankai Railway Co., Ltd.

A Prospective Line.—Japanese interests have approached the government with regard to the construction of a railway line from Tienpaoshan to the Tumen River. The matter is now under the consideration of the ministry of communication.—*Reuter.*

South Manchuria Railway Company.—A semi-annual general meeting of the South Manchuria Railway Company was held at the Railway Association building recently, when it was announced that the company realized during the last business term a net profit of Y.35,540,774 inclusive of the amount brought over from the preceding term. It was decided upon on the occasion to dispose of this colossal amount as follows :

Legal reserve	Y.1,369,599
Dividend to shares held by government	5,445,902
Dividend to ordinary shareholders (6 per cent. per annum)	5,332,602
Special dividend to ordinary shareholders (4 per cent. per annum)...	3,555,068
Special reserve	5,000,000
Redemption fund	7,000,000
Bonuses and social expenses	500,000
Allowances to retiring employees ...	150,000
To be carried forward	7,187,601

To Build a Mentoukow-Kingshawu Railway.—The ministry of communications is contemplating the construction a railway from Mentoukow, a city situated at the west of Peking and linked up with the Lukouchao station of the Peking-Hankow railway, to Kingshawu. Officers have been dispatched to survey the line.

A Line to Benefit Alpine Club.—It is said that the Japan Alpine Club is petitioning the railway authorities to construct a new line between Matsumoto and Funatsu, Gifu prefecture.

The New Zealand Railway Contracts.—Glasgow locomotive manufacturers are very gratified at having carried off a New Zealand Railways contract for 45 engines notwithstanding American and continental competition.—*Reuter.*

Rebuilding of Lines.—The Tajima, Tsurumi line and the Tajima, Haneda lines in Kanagawa prefecture will be reconstructed at a cost of Y.372,000.

Light Railway in Shantung Desired.—A native of Shantung known by the name of Sun Chincheng petitioned to the ministry of communications for the permission of building a light railway between Tungtu and Poshan. After due consideration and thorough investigation, the proposal was rejected by the ministry, says the *Yih Shih Pao.*

Construction of Changtien-Sochen Light Railway Again Mooted.—During the year 1916, the talk of constructing a light railway between Changtien and Sochen in Shantung was taken up by the local Chinese gentry, but the scheme was dropped owing to business depression. According to reports from Tsinanfu, the matter has been received. It should be known that Sochen is a distributing centre, articles being shipped to Tsinanfu about 20 miles away from the mart, by means of junks sailing up a tributary of the Small Tsing River. On the other hand Changtien located on the Shantung railway line is fast growing to be a prosperous industrial town, stimulated by cotton plantation started by the Oriental Development Company and sugar-beet farms opened there by the Mitsubishi concern. The light railway under projection, when completed, will measure about ten miles.

Rolling Stock for Chinese Government Railways.—Much publicity has been given the last few months to a loan of $6,000,000 (Mex.) made by a group of Chinese bankers to the ministry of communications of the Chinese government for the purchase of much-needed additional equipment for the Peking-Hankow, Peking-Suiyuan, Tientsin-Pukow and the Shanghai-Hangchow-Ningpo railways, says Trade Commissioner Frank Rhea.

While the invitation for tenders is issued by the Chinese banking group on behalf of the ministry of communications, it is for all practical purposes the ministry of communications that is buying this equipment direct for these several railways, which are all covered by foreign loans except the Peking-Suiyuan. It is true that the outstanding loans on the Peking-Hankow might be termed non-controlling, but the loans on the Tientsin-Pukow, Shanghai-Nanking and Shanghai-Hangchow-Ningpo are still restricting in many ways as to the ministry of communications handling these properties as it elects. The British-Chinese Corporation's action in calling attention to its claim that the present loan agreements give it (or its agents) the option for purchasing such materials for the Tientsin-Pukow, Shanghai-Nanking and Shanghai-Hangchow-Ningpo lines, and also claiming that the agreements provide that British materials be given preference is evidence of the restrictions which it is claimed these agreements carry in favor of the loaning nations.

Railway in Celebes.—As the new railway in South Celebes is soon about to be started, the Java States Railways intend to participate in the capital needed for the erection of a modern hotel at Macassar.

Short of Rolling Stock.—The Dutch East Indian government railways are still short of about 115 locomotives, 333 passenger-carriages and 3,101 trucks.

South Sumatra Railways.—The State Railways are building large workshops at Lahat, South Sumatra. The Palembang line is about to be extended from Muara to Lahat.

Electrification Railways, N.E.I.—The electrification of the railway from Meester Cornelis to Tandjong Priok will shortly be commenced.

Railways in Borneo.—A private company, who are applying for a contract to build a line from Bandjermasin to Amuntai (Borneo), have also petitioned the government to be allowed to build one from Pontianak into the interior.

To Connect Pangkiang with Pingtichuan: China.—Chang Ching-hui, commander-in-chief of the Mongolian expedition, wires asking the Peking government to build a railway connecting Pangkiang with Pingtichuan so as to facilitate transport.

Chinese Eastern Railway Loan.—Referring to the article in our previous issue on the 5th instant, a Tokyo telegram dated the 6th states as follows :

As a result of negotiations between the Chinese Eastern Railway and the Japanese banking group, it has been decided to hand Y.2,000,000 during June as the first advance, and Y.3,000,000 during July out of the total loan amount of Y.20,000,000. These advances are to be employed mostly for paying the employees, the remainder to be used for the construction of locomotives and other rolling stock and the purchase of rails and accessories. It is understood that the Japanese are to supply the necessary rolling stock and other materials.

Out of the above loan, Y.2,300,000 is to be deducted for payment to the South Manchuria Railway Company in settlement of the coal account due from the Chinese Eastern Railway.

New Director, Amur Railway.—The new provisional Primorskaya government appointed Mr. Katchenko, who was formerly director of the Amur Railway, to the directorship of the Ussuri Railway under date of the 28th ultimo. M. Kanari (late director of the Ussuri Railway) was taken into police custody early on the morning of the 27th ultimo.

The Railway Car Loan, Chinese Banking Group.—Tenders are invited by this banking group, on behalf of the ministry of communications for purchasing 16 passenger car underframes for Shanghai-Hangchow-Ningpo Railway. Regulations, drawings and specifications for tenders for the above mentioned underframes may be obtained from the office of the Chinese banking group upon payment of thirty dollars ($30). Tenders will be opened at 2 p.m. August 31st, 1921. As these drawings and specifications are fifty sets in all, each bidder is limited to one set only. The office of the Chinese banking group is located at the Peking Bankers Association, Hsih Bee Shih, Chienmen, Peking.

Deny New Rail Contract.—The ministry of communications has made a formal denial of the report of the conclusion of the Weihsien-Chefoo railway contract between the Shantung people and American financiers. It points out that the Shantung gentry have been working independently and have no intention of co-operating with foreign investors.

Kirin-Kwainei Railway Loan Consummated.—Concerning the Kirin-Kwainei Railway loan, for which a provisional agreement was signed with the Terauchi ministry and an advance of Y.10,000,000 was handed, negotiations were carried on between the Japanese and Chinese governments for the exchange of a formal agreement. The Japanese side proposed to appoint Japanese as chief engineer, traffic manager and chief accountant, which proposal was not agreeable to the Chinese side. Mr. Ono (vice-president, the Industrial Bank, Tokyo), after negotiating with the ministry of communications, Peking, arranged to seek some practical expediency about the supervision of the accounts, and the formal agreement was consummated.

Mr. Liu Meng-hsiung has been appointed president, and Mr. Wei director.

The Japanese banking syndicate has consented to advance Y.10,000,000 as construction funds.

Inspectors of Railways: Japan.—The department of railways has appointed several inspectors, whose function it is to inspect state rail

ways regularly with a view to keeping up the lines' best standard of efficiency.

Tenders for Iron Wanted.—The Chinese Eastern Railway is inviting tenders for about 200 tons of various kinds of sheet and bar iron. The tenders have to be deposited at their Harbin office not later than July 15.

A New Railway for Canton to Heungshan.—Realizing the pressing need for a railway to connect Canton with Heungshan, one of the richest and most important districts in the province—its annual income from revenues and taxes is said to equal that of the whole province of Kweichow—an enterprising company proposes to construct a railway between Canton and Shik-ki, the country seat of Heungshan district. Plans and estimates for the construction of the line have been submitted to the governor together with a petition applying for registration of the company as railway concern.

It is reported that the proposed railway will have its Canton terminus at Paak Hok Tung. The lines will pass through the town of Sek Pak in Pun Yi district. As soon as an investigation of the conditions of the company by the officials have been completed and proved satisfactory, registration will be granted.—*Canton Times.*

Siberian Railways Seeking Division of Equipment.—An adequate supply of freight and passenger cars for the Chinese Eastern and Chita Railways will do more than any other one thing to stabilize conditions in the rail zones, to reports from Manchuli. The roads are now trying to agree on a division of cars. The Chinese Eastern has cars belonging to the Amur line and the Amur line has demanded their return. It has been proposed that the roads agree on a car distribution for the present and make a strenuous effort in the meantime to get more cars from some source. Surveys of conditions show that there is ample business for all the cars that can be obtained in the next few years.

Proposed of Early Construction of the Tzeliutsing-Fushun Railway in Szechuan.—The ministry of communications has approved the registration for construction of the Tzeliutsing-Fushun railway in Szechuan, 55 *li* long, filed by Mr. Liu of Fushun. The total cost for the work is estimated at about $1,400,000, of which an amount of over $1,000,000 has already been secured and it now remains to raise the balance of less than $400,000. Actual work is expected to commence in August.

RIVERS, HARBORS, WHARVES AND DOCKS

N.Y.K. Purchase "New Dock" at Shanghai—An important shipping land deal has just been concluded between the Shanghai Dock and Engineering Co., Ltd., and the Nippon Yusen Kaisha, under which the latter company has purchased the Pootung property of the Dock Co. known as the New Dock, situated almost directly opposite the New Dock and Engineering Co.'s premises in Yangtszepoo. The New Dock property covers an area of approximately 79 *mow* and has a very valuable water frontage of 1,096-ft.

Min River Conservancy.—Construction work in the first of the three sections was practically completed when the Foochow report was in the press. It was proposed to take in the third and what may prove the worst, section immediately. The second section, which has a good channel for nearly its entire length, will be left to the last. Already a decided improvement is noticeable in the approaches to Nantai. The report says that the result of the freshets will be watched with great interest during 1921. Even with the small amount of training work in position the effect has been remarkable. One small island opposite Green Island washed away about 1,000 feet, and it is hoped that this hindrance to the free course of the current will have disappeared entirely by the end of the coming season.

Dockyards.—The Kiangnan Dockyard, Shanghai, plans to construct another dockyard on the grounds in front of the naval wireless telegraph station.

New China Port Wanted.—Chinmen, a port situated on a small island opposite to Amoy in Fukien province, is excited over a report that Japan has asked the Chinese government to make Chinmen a treaty port, according to information received there.

Harbor Works, Tjilatjap, N.E.I.—Tenders are being invited for cranes, piers, godowns and other construction for the modernization and extension of the harbor works at Tjilatjap, on the south coast of Java, while railway stations and yards at Bandoeng, Batavia and Sourabaya are to be reconstructed at the cost of several million florins. As already announced, the naval dockyard at Sourabaya is also to be extended, and new docks, wharves and piers, in addition to other works, are planned. The Netherlands East Indies government intend to spend approximately fl. 5,500,000 on Sourabaya dockyard during 1921. The municipality of Bandoeng are considering the establishment of a motor omnibus service in the environs of that town, while a new railway terminus station is to be constructed and shared jointly by the Netherlands Indies Railway Co. and the Netherlands Indies State Railways.

Sourabaya Harbor, N.E.I.—A sum of eight million guilders is to be further expended on Sourabaya harbor during the present year. At first forty millions were asked for, but so much is not available.

Manila Port Improvements.—In a recent issue of the Bulletin of the Philippine government commercial agency it is stated that the port of Manila will soon be equipped with a modern marine railway or dry dock with a capacity of 8,000 tons, according to plans launched by the Honolulu Ironworks and the Earnshaw Shipways. The cost of the project has not yet been decided and the awarding of the contract is left with the representatives in Honolulu.

Dredging of Tung Dee Dong, Huchow.—The dredging work of Tung Dee Dong of Huchow, a famous silk producing place of Chekiang, is estimated to cost $600,000, one-third of which will be appropriated from the local conservancy fund and the remainder contributed by local merchants. The survey has been made and dredging will commence shortly.

Haichow Port Works.—Mr. Tuan Shu-yun, the director of the port of Haichow, is now visiting Haichow to investigate conditions there. Until the Dutch engineer who has been commissioned to carry out the survey, has completed his task, the office of the director will remain at Nanking.

Lighthouses, Hongkong.—Plans have been prepared, and work will shortly be commenced on the erection of three modern lighthouses at Tongku, Lantong Island and the channel rocks, respectively.

Woosung Port.—According to the Chinese press, the authorities of the Woosung commercial port bureau are about to make a survey of Woosung and test the depth of the water in various parts of the river.

Famine Relief Labor in Five Districts. Chihli.—Mr. Tsao Jui, civil governor of Chihli, has instructed the magistrates of the five districts concerned to carry out the following proposed construction schemes by employing famine sufferers :

(1) In Yung-chen district : to dredge the Dah-ching river and build a dike along the river in co-operation with Singchen district.
(2) In Chinyuen district : to dredge Chinyuen-fu river, 135,000-ft. in length. The work is estimated to require 10,800 laborers for a period of five months.
(3) In Ansing district : to dredge rivers lying in Tientsin and Paotingfu and to erect embankments at important points.
(4) In Wuchan district : to plant rushes on both banks of the Fuyang river so as to strengthen the embankment.
(5) In Pingshan district : to dredge the upper reaches of the Tze-wu for 40 *li* and to establish a cotton mill to manufacture cotton goods, Pingshan being rich in cotton product with an annual production of more than 1,000,0000 catties.

Important Harbor Schemes: Japan.—The work of reclaiming 3,800-ft. and the building of a 720-foot seashore at Sakai Harbor, Osaka-fu, will cost Y.1,800,000.

The extension of the north embankment to 1,800-ft., and the reclaiming of 20,000 *tsubo* of land on which factories are to be built, at Wakanai Harbor, Hokkaido, is estimated at Y.2,600,000.

Y.930,000 will be expended on the construction of a 1,300-foot embankment and the reclamation of 3,800 *tsubo* at Nemuro Harbor, Hokkaido.

On which to build coal warehouses, 24,000 *tsubo* of land will be reclaimed along the seashore at Kushiro Harbor, Hokkaido. This will benefit the Taiheiyo Coal Company.

Important Sale of Land: Shanghai.—The Shanghai Dock and Engineering Co., Ltd., has made an arrangement with the Nippon Yusen Kaisha, Ltd., to sell to the N.Y.K. their New Dock property, to be used exclusively for wharves and godowns.

A Commercial Port Project.—A group of Chinese capitalists from the Straits Settlements is negotiating with the Canton authorities to charter and open Whampoa as a commercial port. An extensive scheme has been presented to the Canton government, embodying the construction of a harbor capable of accommodating ocean-going vessels.—*Reuter.*

Peking Authorities Dike Building in Manchurian Rivers.—With regard to the suggestion of the ministry of the interior, following a special investigation into the question of the construction of dikes on the rivers in Manchuria, that an appropriation of $400,000 should be made for that purpose, the Cabinet has decided that the ministry of finance should instruct the provincial financial department to draw the sum, and that the central government would make up any deficiency.

Dairen Harbor Works.—The S. M. R. Co. Harbor Works Office have commenced the work of extending the width of the second wharf of the Dairen wharves by 80-ft. on the eastern side. The eastern side of the same wharf has been closed to the berthing of ships since and will remain so till March, 1922, by which time the work is expected to be finished.

From the consideration of the berthing facility of the same wharf, its northern half is to be completed by the latter part of December next. When the work is done, that section will have over 30-ft. in depth capable of berthing ships of 10,000 ton class.

Next, a new goods storing ground covering 47,500 *tsubo* is to be laid out on the reclaimed land at Jijiko.

ROADS

Highway for Tungkun, Kuantung.—Since the inauguration of the Tungkun bureau of public works it has been decided to construct the Chang-mu-tau—Wei-yang road. On the 13th instant, the first sod was turned in the presence of the magistrate of the district and other prominent business men.

On the Chang-mu-tau section 600 men and women are now employed.

New Peking-Tientsin Road.—It is reported that the construction of a new road from Peking to Tientsin has commenced.

A New Road Building Company.—The Japan Roads Construction Co., Ltd. was organized recently, capital Y.1,000,000, quarter paid up, to

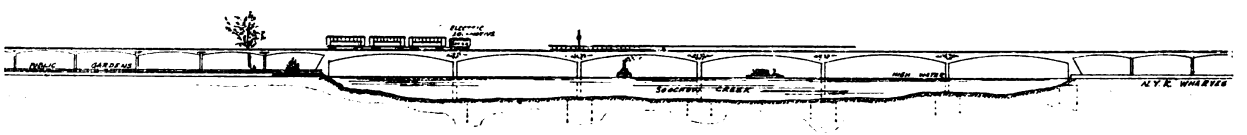
An Elevated Railway for Shanghai

IT was only a few weeks ago that a serious-minded and deep-thinking gentleman, who had stayed in Shanghai sufficiently long to be much impressed with the city, on the eve of his departure sent to the *North-China Daily News* an open letter to Shanghai, in which he made various suggestions for the improvement of the settlement itself and its government. His ideas were very favorably commented upon in places where such matters are discussed, though there was one point—his idea for the improvement of traffic conditions—which many held to be too advanced, if not impracticable, for Shanghai. That was an elevated railway.

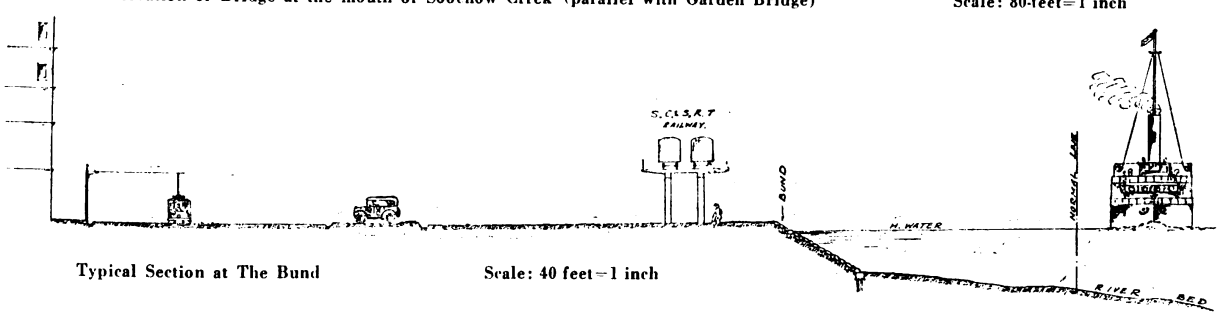
Such a thing had been hinted at before, not unnaturally with the ever increasing number of Americans coming here, but his was the first proposal put seriously into print. Curiously, a local expert had for a long while been working out this very matter and we are now able to put forward his suggestions. The author is Mr. Sidney J. Powell, A.M. Inst., C.E., the well-known civil engineer, foresees difficulty regarding way leaves, but does not consider them insurmountable and, anyway, if a definite scheme is decided on, a route may be chosen which will not offer such troubles.

An Eye to the Aesthetic

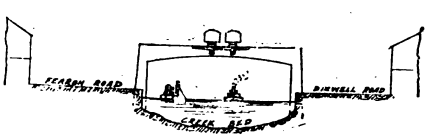
The author has an eye to the æsthetic and his railway would not be an unsightly business like the New York elevated line, with its great timber baulks and the accompaniment of roaring trains. Mr. Powell has planned for concrete standards of artistic design, rigid and solid enough to ensure that there will be less noise than is at present caused by a passing tram car. Many will no doubt wonder at the small figure at which he places the initial cost, but he says it has been carefully worked out and the inner circle, if work proceeds on several sections simultaneously could be completed and in operation in a year. For power he suggests relying on the municipal supply, adding something over Tls. 500,000



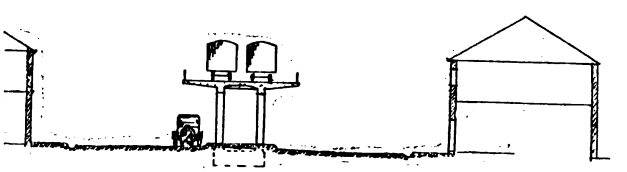
Elevation of Bridge at the mouth of Soochow Crrek (parallel with Garden Bridge) Scale: 80-feet=1 inch



Typical Section at The Bund Scale: 40 feet=1 inch



Cross Section at Hongkew Creek
Scale: 80-feet=1 inch



Typical Section in Avenue Edward VII.
Scale: 40 feet=1 inch

architect and surveyor. It should be pointed out in the beginning that Mr. Powell's scheme is but a suggestion, not the definite plan of an established company, though it is a fact that some highly placed and influential gentlemen who have seen it are already anxious to take it up as a commercial proposition. Mr. Powell, however, has worked on it as though it was a definite scheme. He has presumed that he has the funds and the territory and has accordingly worked out specifications, quantities and materials in a strictly professional way, so that the plan must be considered as something more material than a dream.

Mr. Powell is, of course, well acquainted with local conditions and when asked about the great query regarding an elevated railway—Will Shanghai's soil stand it?—he said there was no question that the scheme was feasible. He admitted there would be difficult places, but concrete rafts would meet the case. He

per year to the settlement's revenue, or this expenditure could be capitalized for a separate installation.

The Broad Outline

The following is an outline of Mr. Powell's scheme :—

The proposed railway will run on an elevated track constructed of re-inforced concrete and coming down by easy gradients to the level of the Shanghai-Nanking Railway, as it approaches that railway's property and will, with their co-operation, run on their property from Jessfield Station to where the track leaves their main North Station. The branch to their South Station (Hangchow Line) can come down to ground level after leaving the boundaries of the native city.

The railway to be electrically powered on the centre rail system, thus obviating overhead wires. It will be capable of conveying

passengers from the Bund to the western or eastern districts in a few minutes. The seating capacity of each train can be at least 500. The services proposed would be an inner circle running from the Bund viâ Avenue Edward VII. Thibet Road, North Thibet Road, Shanghai-Nanking North Station, end of Range Road, Hongkew Creek and back to the Bund, and an outer circle service to run from the Bund viâ Jessfield Station and the Shanghai-Nanking Railway North and back to the Bund. Intermediate service to South Station (Hangchow Line) and to Wayside.

Art and Utility

The railway would obviate any destruction of the Public Gardens and, as the concrete arches permit of graceful design, should not be unsightly. At the same time, it will provide a shady walk. The railway would relieve existing and increasing congestion of traffic in Shanghai, as it would not only cope with passenger traffic, but would deal with goods which at present are conveyed from mills and factories in different parts of the settlement and outlying districts, taking this traffic off the already overcrowded existing roads.

The cost of the railway would be considerably less than the cost of widening existing roads and, at the same time, it would increase transportation possibilities in a much greater proportion than a road widening, in that a road widening of 10-ft. does not increase the speed of transportation considerably, whereas the proposed railway does do so. The railway would not interfere with the passage of existing means of transport. It would run on or over public or railway property throughout its entire length, except for short distances and over those distances could no doubt secure the co-operation of property owners, in view of the facilities derived.

A Moderate Cost

The estimated cost of the elevated track is Tls. 16,400 per length of 100-ft., including foundations, columns, platform, rails and sleepers, but not including rolling stock. The average cost of acquiring a strip of land 20-ft. wide along Peking Road would be Tls. 22,000 per length of 100-ft.

The total estimated cost is as follows :

Elevated Track.—Inner Circle.		
The Bund, Avenue Edward VII, Thibet Road, Shanghai North Station, Hongkew Creek and over Soochow Creek, back to the Bund, 270 by Tls. 19,000...		Tls. 5,130,000
Branch to end of Avenue Foch, 130 by Tls. 19,000		2,470,000
Continuation at low level to Jessfield Station, 75 by Tls. 600		45,000
40 *mow* at Tls. 2,000		80,000
Extension to Wayside, 60 by Tls. 19,000...		114,000
Extension to south of native city, 65 by Tls. 19,000		125,000
Extension at low level to South Station (Hangchow Line), 30 by Tls. 600 ...		18,000
		Tls. 7,982,000
Allow for stations		850,000
Rolling stock—		
Ten locos. at Tls. 5,000 ...	50,000	
Cars and wagons, 50 at Tls. 8,000	40,000	
Equipment, signals, etc. ...	100,000	
		190,000
		Tls. 9,022,000

Annual expenditure—		
Staff, etc., per annum	Tls.	96,000
Power, per annum		547,500
Stores, etc.		50,000
Interest charges		500,000
	Tls.	1,193,500
Annual revenue—		
Passengers (2,000,000 per week), 2,000,000 by 10 cts. by 52 = $10,400,000 ...	Tls.	7,200,000
Goods (500 tons per day), 500 by 365 = 182,500 tons at $2 = $365,000 ...		262,800
	Tls.	7,462,800

The above is Mr. Powell's scheme. He has studied elevated railways elsewhere and has made comparisons. Also he says that he is confident he has not underestimated the expenses of his railway, nor overestimated its probable revenue, but rather the reverse in each case.

Mining Resources of China

COMMENTING on the need of a development policy on the part of those interested in China mining the Peking correspondent of the *London Times* says The Royal Society of Arts has recently offered a money prize and silver medal for a paper on the "Mineral Resources of China," conditions relating to which have just reached Peking. The fact that so influential a body is so far interested in this country is, of course, gratifying to those concerned with mining, and in ordinary circumstances competition for the honor of winning the prizes would have been keen. To those particularly interested, however, the subject for the paper is not happily chosen, for the following reasons.

In 1908 Bailey Willis, in *Economic Geology*, and, in 1911, T. T. Read, in the *Transactions of the American Institute of Mining Engineers*, treated the self-same subject exhaustively. In 1919 the Geological Survey of China published—in the Chinese language—two comprehensive bulletins on the geology and coal and mineral resources of the country, and a third one is in preparation relating to the iron resources. These two bulletins, together with the one about to appear, practically cover the whole ground as far as it is possible for it to be covered in a country where scientific investigation is in its infancy, and political conditions so chaotic that systematic study is extremely difficult. The Chinese bureau of mines, in fact, is a repository of all that is known about geology and mining in China, but much of this knowledge is locked away in a language inaccessible to all but a very few. Anybody knowing Chinese and having access to the information stored by the bureau would have an enormous advantage in competing for the prizes offered by the Society of Arts. The paper so written might be extremely interesting, but it would not contain much that was original on the part of the writer, nor would there be any serious competition against it.

What is really wanted is discussion, not on the mineral resources of China, for these are as well known as they can be in present circumstances, but on their development. The bureau of mines in Peking does everything for geology and nothing for mining, except to draft strangulatory regulations. The treaty powers protested against the Chinese mining regulations of 1914, and the government called in Mr. G. G. S. Lindsay, the well-known Canadian expert, to draft fresh regulations. His draft, however, has been pigeon-holed, and mining development in China, so far as foreigners are concerned, remains at the starting-point of 1903.

The above is a clear cut statement of Japan's ideas as to equal opportunity and the open door in regions where she has paramount interests. It fully answers the accusations that the "door is closed in Manchuria," that "where the Japanese go in, the white man goes out." Americans are prone to overlook that the reverse of this last catch phrase is more to the point, and compels the Japanese to seek their economic future in Asia. It is largely the same in Manchuria as in Shantung, where at one time American trade associations were declaring that the archives of the consulate at Tsingtau were filled with records that would prove Japanese discrimination against American goods. On investigation, the statement was found to be a pure fabrication. There was no record in the consulate of any discrimination against American firms in Shantung. The consul, however, did state in his official report to the state department "that if Americans and Europeans had not availed themselves of the many business opportunities in Shantung, it is because they were preoccupied with other more pressing and important matters arising out of the war." He concluded by stating "It has not been due to any unwillingness on the part of the Japanese authorities to extend privileges to others than their own nationals." The American consul then went on to state that the civil administrator of Tsingtau had offered all inducements so that American citizens could unite with Japanese in developing the commercial and industrial possibilities of the port.

The situation is very similar in Manchuria. Americans do not go there, because they have been taught to believe that competition with the Japanese is impossible, that all manner of obstacles will be placed in their way of doing business with the Chinese. There is no doubt from information that comes to us from reliable sources, that Japanese commercial competitors have helped to create this impression by bragging and menacing methods, but we are satisfied that this never reflected the policy of the Japanese government or that of the South Manchuria Railway authorities, and that, if the foreigner had taken his complaint direct to the proper authorities, there would have been no good reason for him to nurse a grouch. Foreigners, Americans especially, have permitted themselves to be guided by the experience of a few firms who harbor a lasting grievance against the Japanese, arising out of close competition in other parts of China. They have developed a clear case of "cold feet" in respect to Manchuria.

The declaration of the new president of the South Manchuria Railway should set at rest all these old stories, and Americans and British should take him at his word and co-operate for the common development of this wonderful region. If Manchuria, Mongolia and adjacent territories are to serve as the reservoir for the overflow of Japan's millions, an era of prosperity will come to the Far East such as will eclipse all past booms in other parts of the world. A company whose property is now valued at $700,000,000 gold, expending at least $15,000,000 a year is in America, and an equal amount in England and other countries, whose program calls for the expenditure of $200,000,000 in the next four years, whose trade in engineering supplies is more valuable than the whole of the Chinese railway system, is not going to jeopardize its success, by resorting to methods of discrimination, that, in the end, must earn for it the censure of other nationals and make difficult any important financial co-operation or loan negotiations. Manchuria, Mongolia are the lands of to-morrow, the lands of opportunity in Eastern Asia, where the present generation will witness a repetition of the great developments that followed the opening of the American Far West. The world should take Japan at her word, stop grouching, and come in and co-operate in the opening up of a new centre of industry and civilization.

* * *

What the Filipinos Really Wanted

THE Wood-Forbes mission has discovered that the Filipinos really wanted immediate *dinero* instead of immediate independence and they needed it now, if not sooner, in order to save themselves from going on the rocks of bankruptcy. A hurry-up call from General Wood got the money and now the Filipinos and Americans are clamoring for him to stay with them until the insular coffers are again replete with the cash that is expected to pour into them under his supervision of affairs. When this is accomplished, the Filipinos will probably once more set up the cry of independence with or without strings.

Our little flier into colonial administration without a fixed policy came nearly ending in a calamity, for had the idea of the last administration been carried out and the Filipinos given their independence, it would not have been long before they went on the rocks, and compelled to seek assistance from the international money-lender, with the fate of China as the inevitable aftermath.

Good old philanthropist is our uncle, after all is said and done, always with his hand in his pocket to help some one outside the country.

* * *

French Engineering in China

IN the last number of THE FAR EASTERN REVIEW we inadvertently referred to the Cie Générale d'Extrême-Orient (awarded the second prize for the best design for the Yellow River bridge), as a Belgian concern, when, as a matter of fact, it is French, with head offices in Paris, and represents the strongest combination of French manufacturers that has ever entered the Chinese market. Especially is this true in the engineering sense, as the company are agents for several of the greatest French engineering houses, notable amongst which are the Société de Constructions des Batignolles, the foremost railway constructors in France, the builders of the Yunnan railway and of many others in French colonial possessions; the Cie de Fives Lille, the world-famed engineers whose installations are models of efficiency; the Decauville, whose light railway specialties are standard throughout the world, and so on down a long list of French manufacturers, whose names are closely associated with the advance of France in engineering development, and allied with the strongest French financial institutions. Its entrance into the Chinese field and success in the bridge competition provides evidence of national activities following the armistice, and as one of the reasons underlying the remarkable recovery of French foreign trade in the current year due to a large extent to trade organization.

It may be accepted that the above combination represented by the Cie Générale d'Extrême-Orient will carefully watch and protect French engineering standards and specifications in the development of Chinese railways and other engineering undertakings. The head of the great Batignolles company, M. Eduouard Gouin, was the expert and representative of the French engineering interests who collaborated with the consortium in the initial negotiations looking towards the adoption of a standard set of specifications for Chinese railway rolling stock and accessories, and spokesman for those French interests who in the past have received so little benefits in the way of orders for materials, after having furnished nearly two-thirds of all the capital required for the construction of Chinese railways. All the Russian lines were built with French money, half, or perhaps two-thirds of the Belgian lines, were financed in France and one-half the interest in the Chinese Central Railways, Ltd., which constructed the British section of the Tientsin-Pukow Railway and holds the rights to the Pukow-Sinyang line are French, in addition to a quarter interest in the Canton-Hankow line. With the end of the war, and the necessity of building up French industries, one of the first matters that claimed the attention of the engineering trade, was to obtain, as far as possible, an equitable participation in the distribution of orders for materials from enterprises abroad that their capital had made possible.

France realized that to pay off the foreign indebtedness incurred during the war, she would have to systematically reorganize the country for the purpose of exporting products with which to pay for the materials of all kinds purchased during the war. One of the most notable steps to this end was the reorganization of the

French ministry of commerce, for the double purpose of co-ordinating private export efforts and of placing at the disposal of French foreign commerce, the information necessary to its efficient action. As a result of the law, a national foreign trade bureau was created, official foreign trade bureaus and French chambers of commerce organized in foreign countries, and commercial attachés and agents appointed to various countries. In other words, France set to work to follow the lead of Great Britain and America by creating all the necessary facilities for the proper expansion of their trade interests and co-operation with their merchants.

The national foreign trade bureau is organized in such a way that it can centralize economic information of all kinds which comes from the French commercial agents, chambers of commerce and other sources abroad and disseminate the information at once to interested manufacturers. The bureau also keeps foreign markets advised of the facilities provided by French manufacturers for meeting their requirements.

In addition to these official instruments for advancing their trade interests, a National Bank of Foreign Commerce was created under the law of March, 1920, for the special purpose of facilitating exports by advances on long term commercial paper or by allowing credits against various approved securities, and by placing at the disposition of French merchants information as to the financial standing of would-be purchasers.

The success of French merchants in selling their products abroad since the armistice has been greatly facilitated by these official aids, and when these have been further expanded and the French commercial agents abroad become more firmly settled in their work, greater results are confidently expected to accrue to the nation as a whole.

* * *

Hongkong's Industrial Future

A SIDELIGHT on the reported activities of British interests in obtaining extensive coal mining rights in Kwantung province appears in a recent special number of *The Times*, whose correspondent in Hongkong reveals the formation of a powerful syndicate whose object is to exploit and develop the surrounding country from a coal-bearing and metal-producing aspect. Large concessions located in the new territory have already been obtained from the British government, and negotiations are still pending with the Canton government for concessions in the rich province of Kwangtung. According to this report, there is every prospect that within a short space of time coal and iron will be able to be delivered in Hongkong at prices which will cause little short of a revolution amongst the industrial interests of the Far East. The scheme is one, he says, which, if it matures, will effectively place Hongkong very prominently on the map of the world's big industrial centres. From the shipbuilding point of view, Hongkong, with its native labor, would then become a serious rival to even the world's biggest yards.

The scheme referred to by *The Times* correspondent is the one covered by the agreement entered into on April 23, 1920, by Major Louis Cassel on behalf of a Sino-British corporation called the Kwangtung Collieries, Limited, and the Canton military government represented by Mu Ying-hsin, military governor, for prospecting and working coal concessions in various specified districts of Kwangtung province. It is a Hongkong company capitalized at $10,000,000. The full details of this deal were given in the December 1920 number of THE FAR EASTERN REVIEW. It provides for a directorate of three "Europeans," three Chinese and one of "British nationality," elected by the others.

In response to a question asked by Mr. B. Kenyon in the house of commons on August 5, as to whether the government was aware that the concessions referred to established a practical mining monopoly and were opposed by the American group in the consortium, Mr. Cecil Harmsworth, the under secretary for foreign affairs replied that considerable misunderstanding existed as to the real nature of the concession and explained that:

"The agreement was not monopolistic, but confers prospecting rights for coal in certain districts.

"It allows fifteen months for selection of the mining areas and excludes 51 mines in these districts which are already granted to other parties.

"The concessionaires are not a British company but a Chino-British company formed on lines which have proved mutually beneficial elsewhere in China.

"The British firms interested include those of the highest standing in the Far East and the agreement represents years of effort.

"It will relieve Chinese and foreign shipping in South China from the serious handicap imposed by dependence on imported coal.

"The agreement has been negociated with the provincial authorities strictly in accordance with the Chinese government's rule that the terms must be settled with the provincial authorities before ratification by the central government.

"The British minister made a formal application for ratification on October 30th last but owing to certain difficulties the agreement was referred back for further discussion of the points in detail with the Canton authorities."

A change has taken place since then in the completion of the Canton government, and instead of the military being in power, Dr. Sun Yat-sen is at the head of a constitutional government, and, according to reports, is not in favor of endorsing the agreement, under whose terms an initial payment of $1,000,000 was handed over to the former officials.

Considerable light is thrown on the entire matter by the report of the economic resources committee which was appointed by the Hongkong government last year to study the economic resources of the colony with a view to their development. Reading between the lines of this excellent report it is easy to see that the Cassel concession is the key to the great industrial future of the colony by providing the coal that will permit the iron ore of the new territories to be converted into the steel that will, in turn, bring about the industrial revolution prophesied by *The Times* correspondent.

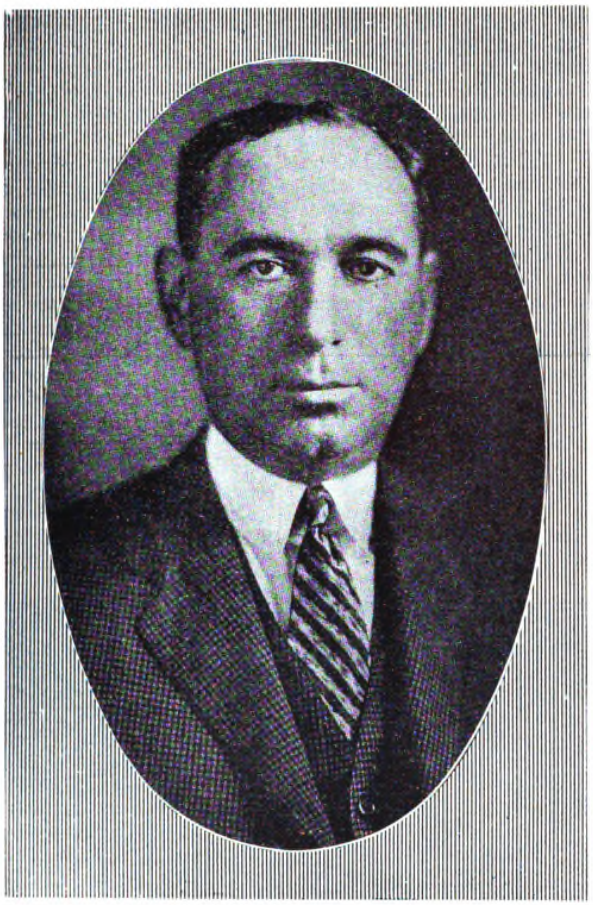
SHIPBUILDING—In reporting upon the possible expansion of the shipbuilding industry, the commission says that all supplies of materials, such as steel plates, sections, billets for forgings, pig iron for castings, etc., are imported from Britain or America. As compared with Great Britain, Hongkong is thus at least two months later in commencing work on a contract, due to the time required to ship materials out. In addition, the freight on materials adds at least 10 per cent. to their cost. Auxiliaries of a special nature are also purchased from home or America and are affected in the same way as steel by time of delivery and freight charges. Timber for decks, ceilings and cabin furniture, in the case of teak or hardwoods, is procured from Siam or Borneo, and soft wood, such as Oregon pine, from the Pacific coast. Timber cannot, however, be considered as costing more in Hongkong as Great Britain has to import both hard and soft woods. The foregoing are the principal items for which the colony has to rely on outside sources for supplies, but there are many other details in the outfit of a vessel which have to be purchased abroad and which, if the demand were sufficient, could be economically produced in Hongkong.

An important factor in the absolute determination as to whether shipbuilding in Hongkong is ever to be a progressive industry is the production of iron and steel in China. If this ever eventuates Hongkong as a shipbuilding centre will be well established.

In the event of minerals being procurable in South China, adds the report, steel works would have to be on a very large scale to cover the large variety of plates, sections, etc., used in shipbuilding. In Great Britain, steel works' output is specialized, some firms turning out plates only and other firms sections only.

Auxiliary machinery is specialized in by many firms in Great Britain and could only be turned out economically in Hongkong if the demand were sufficient.

Mr. Albert D. Lasker, the new chairman of the shipping board, is known best to the business world and to journalists as an advertising expert, who worked his way up from the office boy to be the sole proprietor of the world-famous advertising firm of Lord &



Albert D. Lasker

New Chairman of the United States Shipping Board

Thomas of Chicago, the man who made "Spearmint" a household word in five continents, and who has brought millions in returns to other manufacturers who went to him for expert advertising advice. Mr. Lasker is known as a worker, one, who, if necessary, does his 16 hours a day without grumbling. He will put into the shipping board that element of "pep" required to develop the American mercantile marine along lines that will find a lasting place in the affection of the American people.

The effects of his campaign is already being felt. The board has overturned the policy of Admiral Benson who refused to advertise its marine services, and throughout the world we now see the blazing advertising of the shipping board calling upon Americans to patronize their national undertaking. Americans should travel on American ships as a patriotic duty and be willing to suffer some inconvenience in time and accommodations to do this. On the Atlantic, on the Pacific, and on all the Seven Seas. American ships are now operating calling upon Americans to stop their knocking and get together and boost the new services and so assist the board to make good in serving the country and so advance the interests of every American residing in or doing business in foreign fields.

Y. Matsuoka

IN the shake-up of the South Manchuria Railway administration following charges of political favoritism and jobbery, one of the ablest and best known of the younger officials of the diplomatic service has been appointed to the new directorate. The appointment of Mr. Y. Matsuoka to this position comes as a recognition of valuable services rendered to his government in other directions. For many years he has been attached to the diplomatic service where he distinguished himself on many occasions when called upon to investigate and report on delicate international questions. At the Paris peace conference he had charge of the publicity and intelligence work of the Japanese delegation and became well known to the journalists of all countries for his willingness at all times to give accurate information and elucidate the position of his nation. Few indeed, are the Japanese who have such a ready command of English and ability to express themselves in that language. In this respect, Mr. Matsuoka is one of the most gifted, having passed several years of his early life preparing for the bar in a Michigan law office. His handling of the Japan's publicity at the peace conference earned the commendation of all newspapermen irrespective of nationality or politics. Returning from

Y. Matsuoka

A New Director of the South Manchuria Railway. One of the ablest of the Japan's younger diplomats

Paris, he was placed in charge of the press bureau of the foreign office, where, after a year of hard work, he was compelled to seek a rest. His promotion to the responsible position of director of the

South Manchuria Railway where he will have a still further opportunity for the exercise of his sound common sense and executive ability, must redound not only to the advantage of the railway but of Japanese interests in China as a whole.

* * *

Germans Back on the Job in China

IF the Germans are to pay the huge war indemnity they must work, produce, manufacture and dispose of their products in allied and neutral countries. To protect their own manufacturers the allied countries are raising their tariffs, inventing new ones and employing other artifices to make the payment as difficult as possible. The dominant political party in the United States is now advocating the assessment of *ad valorum* duties on imported goods on the basis of the American wholesaler's selling price on comparable competitive articles of domestic manufacture. This will apply to at least 75 per cent. of America's imports. Every order booked by the Germans in neutral markets, while assisting to cancel the war debt, deprives the allied manufacturer of that much profit. The great illusion surrounding the enormous demand upon Germany at the height of the peace conference is fast being dispelled in the light of trade developments. Already we hear of proposals that the reparations commission shall exercise its power of specifying the kind of goods in which Germany shall pay by demanding raw material instead of manufactured goods, and which is met by a prompt protest in the German press, who, notwithstanding the immense reduction in the total of the debt involved in the proposition, see in the move a plan for hamstringing German industry. The controversy centering around this proposition is intensely interesting for if it goes on we shall see the Germans insisting on paying and the allies by every possible means seeking to avoid being paid. The ultimate outcome of this struggle must be that the allies will grow sick of their bargain, and will take no forcible measures to enforce it.

Nowhere in the world has the German comeback been so rapid as in China, and on all sides we hear of their successful competition in large engineering contracts, in which they invariably are 40 to 50 per cent. lower than American prices. We are informed that in the competition for a cotton mill where the American tender was 800,000 taels, the German price was 400,000 taels on the same specifications. It is reported that eleven complete electric light plants have been booked by the Germans in China in the past six months, in competition with Americans and British manufacturers, in fact the cream of this business has gone to them, and, according to the *North-China Daily News*, they have been equally successful in obtaining orders for cement plants.

The German position in China has been materially strengthened as a result of the treaty which puts them on an equal footing with other nationals and guarantees most-favored-nation treatment and customs reciprocity between the two countries. German trademarks are restored to the original proprietors and German subjects are to pay no taxes not paid by natives of China. Germany engages to fill her obligations to China under the treaty of Versailles, but in addition promises to pay a lump sum as indemnity and in reimbursement of the internment expenses of Germans in China during the war.

The provision in the treaty placing German subjects under the jurisdiction of Chinese courts is a long step forward.

This, however, is not the only important provision of the treaty. It releases all German property to original owners, and it has enabled the reopening of the Deutsch-Asiatische Bank's branches in China at the very time when French prestige in China suffers a severe blow through the failure of the Banque Industrielle de Chine.

That part of the private arrangement between China and Germany concerning the liquidation of former German property in China met with the prompt action by the allied reparation commission. Under Article 260 of the treaty of Versailles the reparation commission is empowered, within a year after the treaty comes into force, to call upon Germany to buy up all rights and interests possessed by its subjects in all public service enterprises, and in all concessions in Russia, China, Austria, Bulgaria and Turkey or their dependencies, and transfer them to the reparation commission, together with any interests the German state may itself possess in such countries, it being left to Germany to indemnify her subjects for any loss that they may suffer from such transfer.

The *Morning Post* reports that the reparation commission called on Germany to comply with this part of the Versailles treaty, whereupon it was found that the Berlin government had found yet another way of escaping the fulfilment of its obligations by taking advantage of the argument that, so far as Article 260 applies to China, the whole situation has been modified by reason of the fact that China refused to sign the treaty. Under the separate treaty of peace signed between China and Germany on May 21 an arrangement has been come to under which the German government has undertaken to pay to China fifty per cent. of the value of German property situated in China and so far not liquidated. In consideration of this payment the property that has not yet been disposed of is to be handed back to its original owners. The amount involved is enormous, as it is estimated that barely one-eleventh of the German property in China has so far been disposed of by the Chinese government, and this one-eleventh represents a value of 1,200,000 taels. Under the arrangement come to between Germany and China the payment to be made by the German government will take the form of four million silver dollars spot cash, while the balance will be paid in the form of bonds issued by Chinese railways.

The reparation commission insists that this private arrangement between the Chinese government and Germany cannot in any way invalidate the right of the allies under the treaty of Versailles, and a commission of bankers is now deliberating as to the method by which German property in China may be transferred to the allies.

Commenting on the documents that have just been published by the German government in regard to its settlement with China the *Temps* characterises the disclosures made therein as veritable revelations. The Chinese government, it appears, first requested Germany to recognize the Versailles treaty in its entirety in order to retain the rights it would have acquired had it signed when the rest of the allies did. In his reply to this demand the German plenipotentiary wrote insisting that the "German government could not now repeal a general recognition of the Versailles treaty, for such a step would be prejudicial to the ulterior revision of the treaty."

These disclosures help to accentuate once more the close understanding which has always existed between China and Germany, and the difficulty confronting other nationals in dislodging her from this position. The facts revealed by the reports from Paris show the Chinese government on the one hand requesting Germany to recognize the treaty in its entirety in order to retain rights it would have acquired had it signed at the same time as the other powers. On the other hand we find the Chinese government refusing to negotiate with Japan over the final disposition of Shantung because it was not a signatory of the treaty which recognized Japan's position.

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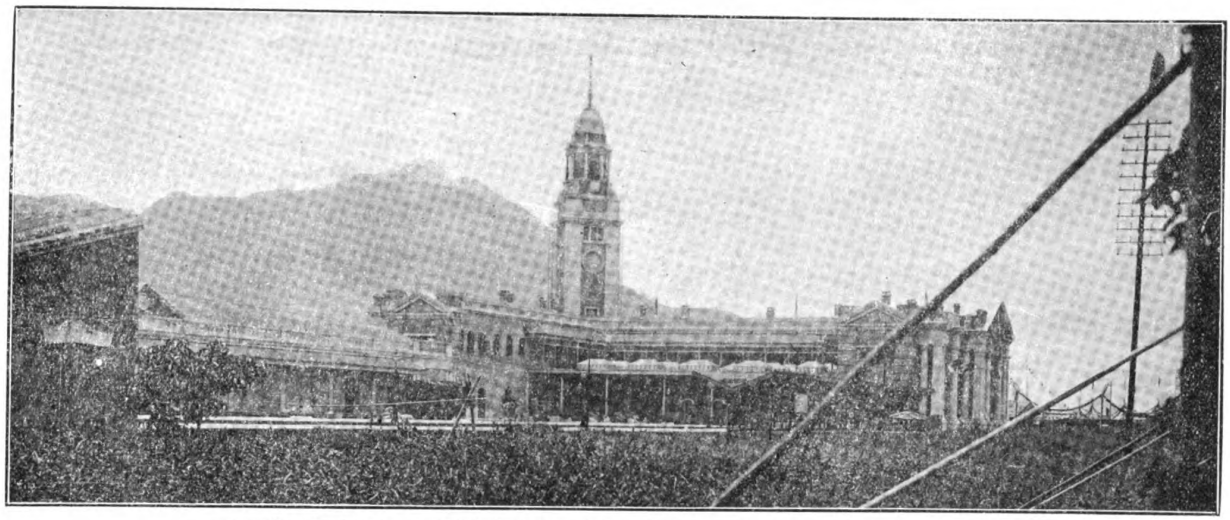
Advertising Statecraft

SUCCESS in business goes hand in hand with judicious advertising. Diplomacy is the biggest kind of big business. What the display advertisement is to commerce, the information article released by governments is to politics. At no previous period of the world's history has publicity been more general or its influence more potential than at the present time. Propagandists, press agents and publicity bureaus are active as never before in the struggle for the spotlight and diplomats vie with each other for space on the first page of the newspaper. Under the



New Terminal Station and Administrative Offices of the Kowloon-Canton Railway at Kowloon

Kowloon-Canton Railway, British Section

THE report of the Kowloon-Canton Railway for 1920 shows receipts from all sources of $520,176 an increase of $30,000 over the previous year. This slight advantage is offset by the steady rise in costs for materials, labor, etc., sending the total working expenses up to $487,144, and leaving a surplus for the year of only $33,032. With a capital investment which now stands at $14,710,-917 the showing must be far from satisfactory for the colonial government who owns and operates the road and must emphasize the necessity of creating industries and developing the resources not only of the New Territories, but of the adjoining province of Kwangtung, in order to bring an adequate return on the investment. Reference to the article on "Hongkong's Industrial Future," appearing in another part of this number of THE FAR EASTERN REVIEW, will indicate that if the projected iron and coal mining enterprises are carried out, a brilliant future will open up for the Railway. No great prosperity can, however, come to the line, until the Canton-Hankow Railway is completed, and the products of Hunan and Kwangtung find an outlet to the sea. Much will hinge, however, on the ultimate outcome of plans and dreams now indulged in by Dr. Sun Yat-sen and other Chinese authorities for the transformation of Canton into a deep-water port and railway terminus. If these plans prevail, then the future prosperity of the British section of the Kowloon-Canton line must be sought in the development of districts served by the line, and this will hinge largely on the success of the schemes for the exploitation of coal mines in Kwangtung that in turn will permit the establishment of an iron and steel industry in the New Territories.

The railway, report which we have overlooked in the above digression, goes on to give the usual cold looking figures necessary for the government auditor and inquisitive ratepayers, which do their best to deprive the document of interest to the man in the street. However, Mr. Winslow says that the local traffic earnings for the year have improved.

The receipts amounted to $194,041.14 against $179,434.14 or $14,607.00 more than the previous year, the increase being under passenger receipts. Through and joint sectional traffic receipts were $318,345.37, an increase of $16,017.63 when compared with 1919. The gross receipts for the year were $520,176.10, as against $490,092.77 for 1919, an increase of $30,083.33.

The balance after paying working expenses stands at $33,032.06 which is $40,028.57 less than the previous year. This difference, however, is more than accounted for by the general increase in salaries granted to the staff, the high cost of coal, and sleeper renewals mentioned in previous paragraphs.

For the past 5 years the results are as follows :—

	Gross Receipts.	*Working Expenses.*	*Net Receipts*
1916 ...	...$366,215.67	$296,691.63	$69,524.04
1917 ...	... 428,246.46	337,431.48	90,814.98
1918 ...	... 433,274.43	356,221.07	77,053.36
1919 ...	... 490,092.77	417,032.14	73,060.63
1920 ...	... 520,176.10	487,144.04	33,032.06

The through and joint sectional passengers carried in 1920 were as follows : Passengers booked by station in British Territory to stations in China 365,665 : Passengers booked by stations in China to stations in British Territory 373,776. The local passengers carried were as follows: Main Line, 392,206 ; Fanling Branch, 47,787.

Locomotives.—There were no additions to rolling stock during the year. There are thirteen locomotives eight of which are "Kitson Clarke" 2:6:4 side tank 19″ by 26″ cylinder, with a tractive force of 27.724-lbs., weight 89 tons and 15 cwts.; 2 "Hudswell" saddle tank 0:6:0, cyl. 14 by 20-ft., 10,604-lbs. tractive force, weight 29 tons and 7 cwt. ; 2 "Hudswell Clarke," side tank 0:4:0, 5 tons and 3 cwts. weight for the 2 foot gauge ; and one Orenstein Koppel 0:4:0, 10 tons for the 2-foot gauge.

Coaches.—There are a total of 28 coaches for the standard gauge main line as follows :

1 first-class saloon coach, 2 first-class dining cars, 1 first-class carriage, 2 second-class carriages, 4 first and second composite carriages, 14 third-class carriages, 4 third luggage and brake.

In addition there are 6 coaches for the 2-foot gauge as follows :

1 eight wheeled bogie first-class carriage ; 1 eight wheeled bogie first-class and brake ; 1 eight wheeled third-class and carriage ; 1 eight wheeled third-class and brake van.

with the railways' standard Gresham and Craven system. Hand brakes are applied on all tender wheels. In addition to the vacuum brakes, an independent engineer's valve is mounted in the cab to operate the steam driving wheel brakes.

The engines were designed to operate on rails of 3-ft. 3⅜-in. gauge, 2½-in. gradient, and over curves of a radius of 16 degrees. Their detailed specifications are listed below:

CLASS 2–6–0

Gauge	3′ 3⅜″
Cylinders	14″ × 18″
Valves	Balanced

BOILER

Type	Straight
Diameter	52″
Thickness of barrel sheets	½″
Working pressure	160-lbs.
Fuel	Coal or wood

FIREBOX

Material	Steel
Staying	Radial
Length	69 13/16″
Width	27¼″
Depth, front	53″
„ back	51½″
Thickness of sheets, sides	⅜″
„ back	5/16″
„ crown	⅜″
„ tube	½″

WATER SPACE

Front	3½″
Sides	2½″
Back	2½″

TUBES

Diameter	2″
Material	Steel
Thickness	No. 12 W.G.

HEATING SURFACE

Firebox	88 sq. ft.
Tubes	674 sq. ft.
Total	762
Number	153
Length	8′ 6″

DRIVING WHEELS

Diameter, outside	37″
„ centre	31½″
Journals, main	6″ × 7″
„ other	6″ × 7″

ENGINE TRUCK WHEELS

Diameter, front	24″
Journals	4″ × 6″

WHEELBASE

Driving	9′ 8″
Rigid	9′ 8″
Total engine	15′ 11″
Total engine and tender	39′ 3″

WEIGHT

On driving wheels	52,000-lbs.
On truck, front	10,000-lbs.
Total engine	62,000-lbs.
Total engine and tender	109,000-lbs.

TENDER

Wheels, number	Eight
„ diameter	24″
Journals	3¾″ × 7″
Tank capacity	2200 U.S. Gal.
Fuel „	2 cords
Service	Passenger and Freight

CLASS 0–6–0

Gauge	3′ 3⅜″
Cylinders	16″ × 20″
Valves	Balanced

BOILER

Type	Straight top
Diameter	44″
Thickness of Barrel sheet	7/16″
Working pressure	No. 160
Fuel	Soft coal

FIREBOX

Material	Steel
Staying	Radial
Length	64 1/16″
Width	27″
Depth, front	41¾″
„ back	40⅜″
Thickness of sheets, sides	⅜″
„ back	5/16″
„ crown	7/16″
„ tube	½″

WATER SPACE

Front	3½″
Sides	2½″
Back	2½″

TUBES

Diameter	2″
Material	Steel
Thickness	No. 12 W.G.
Number	103
Length	9′ 4″

HEATING SURFACE

Firebox	59 sq. ft.
Tubes	499 sq. ft.
Total	558 sq. ft.
Grate area	12 sq. ft.

DRIVING WHEELS

Diameter, outside	42″
„ centre	36½″
Journals, main	7″ × 7″
„ others	7″ × 7″

WHEELBASE

Driving	10′ 0″
Rigid	10′ 0″
Total engine	10′ 0″

WEIGHT

On driving wheels	78,000-lbs.
Total engine	78,000-lbs.
Tank capacity (side)	1200 U.S. gal.
Fuel	2 tons
Service	Switching

South Manchurian Railway Expenditure

The acting British consul at Dairen states that the total estimated expenditure of the South Manchuria Railway Company for the financial year 1921-22 amounts to Y. 55,960,827, made up as follows:

	Yen.
Railway	13,920,288
Vessels	1,180,498
Harbor works	4,763,794
Mining	11,004,446
Industries	1,333,142
Iron works	1,554,227
Electricity	2,485,961
Gas	1,225,172
Hotels	145,844
Local administration and building	3,322,155
Lands	4,602,958
Buildings	6,422,342
Total	51,960,827
Reserve	4,000,000

Engineering, Financial, Industrial and Commercial News

AGRICULTURAL

Sugar Cane Cultivation in Chekiang.—A number of overseas Chinese are attempting to introduce Formosan sugar cane into the province of Chekiang and its surrounding territories and have established a number of experimental farms. The seedings imported from Formosa are said to be growing well.

Agricultural Depot, Harbin.—An agricultural depôt covering an area of 5,000,000 square feet is being established with a capital of $1,000,000 on west of Sungkiang-chen, Harbin.

Growing Demand for Harvesters in Manchuria.—It is reported that there is an opportunity in Manchuria for the introduction of bean harvesters and thrashers of from 4 to 8 horse-power, suitable for the cultivation of the soya bean, the principal export crop of the district. There is also a market for thrashing machines with cylinders not to exceed 28 inches, and of about 8 horse-power, mounted on wheels, and also for small mills to husk rice, kaffir corn, millet and other grains, according to an article in *Finance and Commerce*.

AUTOS

Changsha-Hsiangdai Military Road to Run Auto Service.—Mr. Chen Tze, gentry of Hsiangdai, Hunan, has entered into an agreement with the Hunan provincial authorities for renting the newly built Changsha-Hsiangdai military road for running automobiles. A company named Loong Hsiang has been established with a capital of $100,000 to undertake the enterprise and ten auto buses capable of accommodating 32 passengers each at a total cost of about $70,000 have been ordered from Shanghai.

British Cars for Japan.—Several of the principal motor manufacturers have of late received numerous enquiries from Japan in regard to the importation of British cars into that country. Hitherto the bulk of the trade has been in American hands, but there is a growing demand for substantially built vehicles having the quality of finish which has always characterized the British car. Outside the principal cities Japanese roads are not of the best, and it is essential that to make good out there a car must be an uncommonly good hill-climber. A member of the British trade who has for some time past been making a study of the Japanese market reports that motor-tractors are also likely to find a good sale, as there is a call for them in many of the sugar-producing areas.—*B. C. C. J.*

AVIATION

The Peking-Kansu Air-Line.—With reference to the air-line between Peking and Kansu, it has been decided that a landing field will be established respectively at Lanchow and Ping-liang in the province of Kansu. The stations will have a length of 300 feet and a width 100 feet and are to be completed in November, when the air-service is expected to begin. The governor of Kansu has been instructed by the ministry of war to that effect.

Oversea Aerial Flight: Japan.—The first oversea long distance aerial flight is to be held between November 10 and 20 under the auspices of the Imperial Aeronautical Association, Tokyo. The proposed route is to start at Liushutun opposite Dairen across the Dairen Bay and to pass over Seoul, Taikyu and Fusan, stopping for the night at Seoul. Then, the aeronauts will land on Okinoshima in the channel and will choose either Tachiarai (Fukuoka), Kurume or Kumamoto for the destination. The distance to be covered is 1,300 kilometres and the time required is put at 8 hours. The prizes offered are Y.30,000, Y.25,000 and Y.15,000 for the 1st, 2nd and 3rd prizes. Judges are to be stationed at points on the proposed route.

New Aeroplanes, Japan.—Large army aeroplanes, 25 in number, ordered from France, have arrived and have been transferred to the Japanese army aerodrome at Tokorozawa. After a trial flight at Tokorozawa the newly-imported craft will be distributed to the various army divisions. These aeroplanes are for the purpose of dropping bombs and carrying war supplies. They will be capable of carrying 15 men and of continuous flights of 16 hours.

Private Air Service for Szechuan.—Several aviators in Szechuan have recently gathered a capital of $600,000 for the establishment of an aerial transportation service by airplanes.

According to the plans four large seaplanes, each having a capacity of carrying 30 passengers and cargoes are to be purchased for the Ichang-Chungking service and several smaller ones for the service in the interior, besides a number of motor-boats. A petition has been submitted to the ministry of communications and the aeronautic department who have been requested to grant the registration.

The aeronautic department, considering that the name of the said Company, the Chuan-Kiang Aerial Company, would confuse the name of the aeronautic department, has replied ordering the promoters to change its name first.

Some time ago a French merchant purchased a seaplane for preparing to start a commercial service between Szechuan and the Yangtze. Owing to the importance attached to it, the government has flatly refused to give permission to the French merchant.

BRIDGES

To Re-Construct Bridges Along Peking-Mukden Railway.—In order to avoid possible breakage of bridges at Liu-ho-kew, Pei-gee-pao and Singming during the rainy season, General Chang Tso-lin has proposed to construct strong iron bridges between the section from Mukden to Shanhaikwan in place of the old ones.

Belgians Given Yellow River Bridge to Build.—The tender examination committee appointed by the ministry of communications has awarded the contract for the Yellow River railway bridge to the Societe Belge pour l'Exploitation Industrielle, which estimates the cost at $10,500,000.

Prizes of $80,000 and $25,000 respectively, are awarded to the Compagnie Generale d'Extreme Orient and another French company for the second and third-best tenders.

BUILDINGS

New Building for Chinese Post Office.—The Chinese postal administration invites tenders in competition for the election of a two-storeyed office building at the directorate-general of posts, in the ministry of communications, Hsi Chang An Chieh, Peking.

Plans, specifications and forms of tender may be obtained on application to the chief secretary, directorate-general of posts, Peking.

May Build Y.500,000 Museum in Uyeno.—A Y.500,000 museum, to be known as the Citizens' Museum and to be planned as a place for materials scientific, historical and botanical from all parts of the world, will be built in Uyeno Park within the next few years if plans now being considered by municipal authorities there are carried out. The proposal to erect such a building is said to have come at the instance of Mayor Baron Goto.

New Building for Soochow Telephone Exchange.—The new building for Soochow telephone exchange is being built at Lu-chu-fong-hong, Soochow. The construction calls for an expenditure of more than $70,000 and the work is to be completed in ten months.

Chinkiang to Build Large Storehouse.—As 15 locomotives and 200 forty-ton freight cars have been lately added to the Shanghai-Nanking Railway's rolling stock, the storehouses along the line will be consequently extended so as to be able to hold more goods. The station master at Chinkiang has received instructions to that effect from the traffic manager of the above-mentioned railway, and the old warehouse there will be enlarged if there is any spare space around it.

COMMERCIAL

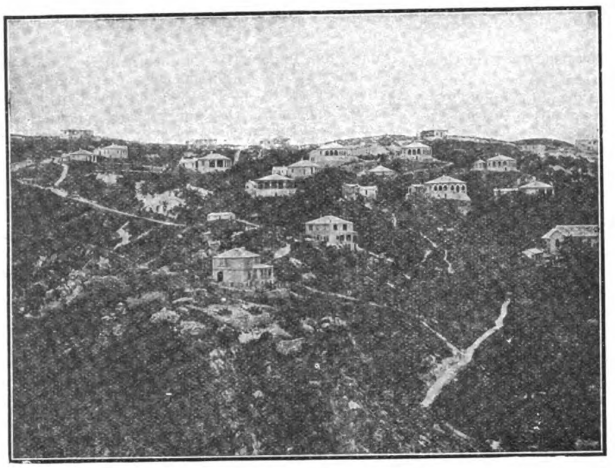
Coal Tar Pitch for Briquettes.—Suppliers of coal tar pitch for the above purpose and enquiring for consumers of the above products.

Mr. E. S. Little, Australian trade commissioner in China, will be glad to answer any enquiries on the subject.

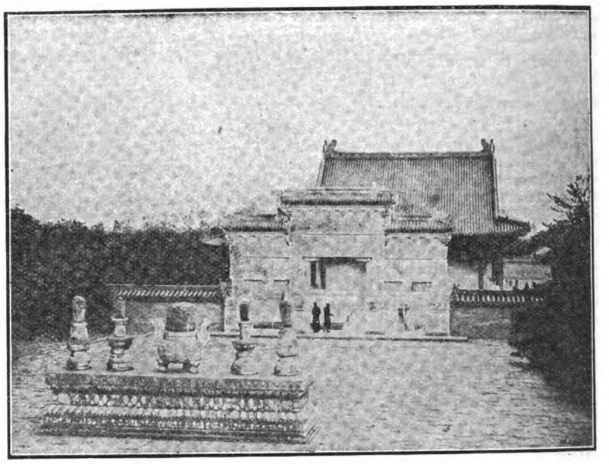
A Chinese Bazaar.—Mr. Wu Ting-seng, one of the directors of the Nanyang Bros. Tobacco Co., Ld., and several other prominent Chinese merchants have established the Shanghai Bazaar, Ld., in Shanghai. The bazaar will be capitalized with $800,000 in shares of $10 each. One quarter of the authorized capital will be paid up.

Glass for Manchuria.—The Japanese Consul at Kirin has called the attention of Japanese glass manufacturers, in his cable report to the Japanese foreign office, to the fact that strong competition is possible in North Manchuria among Japanese, American and Belgian glass manufacturers. American and Belgian cargoes have already come into the North Manchurian market in increasing numbers, according to the report. The building industry in and around Kirin presents much depression following the general hard times since last year. Glass is in less demand, but fair sales are maintained. In the retail trade Japanese-made "Kuro Hisbi" is quoted at and around Y.22 per boy although the ruling prices are roughly a decline of 4 per cent. as compared with the early part of last year, when business was good.

CHINESE GOVERNMENT RAILWAYS



SUMMER RESORT AT CHI KUNG SHAN



TOMB OF EMPEROR YU CHENG NEAR LIANG KOW CHWANG

PEKING-HANKOW LINE

"The Road Through The Heart of China"

THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

From the Capital to Hankow the journey about 30 hours by the bi-weekly "Express" through train which is provided with up-to-date sleeping and dining accommodations.

Chikungshan Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are hundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Reservations, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

Telegraphic Address: "KINCO" **Codes: A.B.C. 5th Edition** **Telephone East 1698**

Mineral Survey in South Manchuria.—The production of steel on a commercial basis by the South Manchurian Railway Company is expected to result from the comprehensive survey of the company's coal and iron ore properties by six American geological and engineering experts, which will be completed August 24th, when the party will return to America. W. R. Appleby, dean of the School of Mines of the University of Minnesota, heads the party, which also includes W. J. Mean, professor of geology, University of Wisconsin; W. H. Emmins, professor of geology, University of Minnesota; Frank Hutchinson, consulting engineer and specialist on ore benefication of Duluth; L. D. Davenport, formerly chief engineer and W. Crago, formerly exploration engineer, for the Oliver Iron Mining Company of Duluth and Boston.

The Coal property which is to be examined is estimated to have about 1,200,000 tons deposit and a vein 150-ft. wide. It is now producing about 10,000 tons, which production it is hoped to double. The ore deposits are located at Fushun.

Mr. Yozo Tamura, who represents the South Manchurian Railway Company in America, is accompanying the experts.

Peking Ministry's Mining Report.—According to the report of the ministry of agriculture and commerce, during the month of May permission to operate mines was granted as follows :—

Mines Location	Mineral Area	Merchant's Name
Coal Hwei-hsien, Honan	1 sq. *li* 387 *mow* and 3305sq. ft.	Kuo Sung
" Hsuan-chen, Anhwei	—	Liu Sing-tso
" Wu-lung hsien, Kirin	2,144 6 *mow*	Liu Kuo-fan
" Tsuyuanhsien, Shansi	—	Yang Tien-chong
" Pingtinghsien, Shansi	—	Xing Wei
" Chuyungsien, Kiangsu	529,6 *mow*	Wang Tze-men
" Wei-chen-hsien, Shansi	6 sq. *li* 287.76 *mow*	Liu Zso pang
" Chang-shun-hsien Chekiang	1,906 4 *mow*	Loh Pah-hung
" Wei-chen-hsien, Shansi	—	Feng Lu-yi
" " "	404 6 *mow* and 48 sq. ft.	Tsai Ting-hsien
" Datunghsien, Shansi	—	Nien Shi-ju
" Fan-chang-hsien Anhwei	841 1 *mow*	Lee Tee-yuan
" Fu-sing, Jehol	5,250 *mow*	Han Quen-tai
" Ning kuo, Anhwei	—	Shen Tsing ching

During the same month, the following deposits have been discovered and application for preliminary workings by the following named merchants were passed by the ministry :—

Mines Location	Mineral Area	Merchant's Name
Coal Shehsien, Honan	5 sq. *li* and 491 *mow*	King Jui
" Shoneehsien, Shansi	—	Li Tze-an
" " "	4 sq. *li* 261 *mow* and 1220 sq. ft.	Tien Kien hsuan
" Tsinchenhsien, Shansi	7 sq. *li* 510 *mow* and 4450 sq. ft	Chow Chao-hsu
" Between Datunghsien and Tsuyuanhsien, Shansi	6 sq. *li* 376 5 *mow*	Wei Sung-hua
" Shoneehsien, Shansi	8 sq. *li* 483 *mow* and 2850 sq. ft.	Keng Tze-yue
" Chinyenhsien, Kiangsu	—	Chen Hsien
" Chinchen, Shansi	8 sq. *li* 455 *mow* and 3887 sq. ft.	Yao Chee-yao
" Chin-cheng, Shansi	5 sq. *li* 533 *mow* and 1150 sq. ft.	Pang Chien-chin
" Wei-chen-hsien, Shansi	300 *mow* and 3162 sq. ft.	Chao Chang keng
" Pei-tsai-kew, Suiyuan	—	Liu Foong tsai

OIL

Chinese Oil Resources.—In the June 2, 1921, issue of the *London Financier*, attention is drawn to the existence of rich oil deposits in China. In the province of Kansu, south of the desert Gobi, at the base of the Nanchung mountains and near the River Tsche-King-sia, are situated petroleum rocks. The oil, which is collected from daily accumulations in about a dozen wells of 3 feet, is used as lubricating and illuminating oil. In the mountainous district of the province of Shensi, about 100 miles southwest of the town of Ningtiao-liang, there are said to be rivulets of petroleum descending from great heights from red rocks and sands. There are also to be found in this district limestone, coal and large quantities of gas. The crude oil, which is of various colors, is used principally as an illuminant for lamps, the black, viscous oil being employed as a lubricant.

Although not the richest of China's oil resources, the best known are the petroleum wells of North Shansi, which for many years have supplied the country with illuminating oil. The petroliferous formations that distinguish the transcaucasian oil fields are known to cover a vast range and it is contended that some of the richest gushers will be developed in the Chinese section. Although the production of oil in China has been neglected in the past, there is substantial basis for the belief that the field offers great opportunity for the future development of a vast source of supply. The article in question, which goes into this interesting subject in great detail, may be obtained from the Far Eastern division.—*Commerce Reports.*

Fuel-Oil Supplies for Japanese Government.—The Asiatic Petroleum Co. (British), has recently completed a contract (through the Rising Sun Petroleum Co.) to furnish the Japanese government with 200,000 tons of fuel oil. When this contract is fulfilled the existing tanks of the Japanese government will be filled to capacity. New tanks, however, are being constructed. The efforts on the part of the Japanese government to buy out the oil interests of some subsidiary companies in the Dutch East Indies were not successful. Also the efforts of the government to develop the oil fields in Saghalien are meeting with little success, not because of the lack of oil, but chiefly on account of the remoteness of the oil fields and the severity of the climate which permits operations during not more than three months of each year.

Petroleum in China.—According to latest report, there are 22 petroleum wells in Chihli, 4 in Fengtien, 2 in Kirin, 13 in Kweichow, 17 in Yunnan, 8 in Shensi, 5 in Kiangsu, 4 in Kwangsi, 4 in Hunan, 4 in Kiangsi, 3 in Szechuan, 2 in Hupeh and 1 in Kwangtung, making a total of 91 wells of which Chihli, Kweichow, Yunnan and Szechuan possess the best.

Oil Mills in Tientsin.—The refined oil industry in North China is on the increase, eight mills now being in operation in the city of Tientsin. Four are of Japanese ownership, three of Chinese and one of Italian, the latter being established as the city's first mill. The Italian mill has a daily output of 6,000 catties of peanut, linseed and castor oils, and recently has increased its capitalization from $100,000 to $200,000. Its product, which is pressed by both the hot and cold process, is for export exclusively. The Sino-Japanese Oil Mill was originally started by a group of Chinese and was eventually sold out to Japanese interests. It has a plant valued at $100,000, which has a capacity for a day of twenty-one hours of 7,000 catties of peanut oil. The Pei-yang Oil Mill is a pure Chinese concern with $60,000 capital. The Hsin Nun Oil Mill has a capitalization of $200,000 and is using the American method of extracting the oil. The Chun Wah Oil Mill specializes in cotton seed oil and has a daily capacity of 4,000 catties.

RAILWAYS

Cheng-kar-tung-Pei-ying-tai-lia Railway Under Construction.—The construction work on the prolonged section from Cheng-kar-tung or Pei-ying-tai-lai on the Sze-ping-kar-Cheng-kar-tung Railway is carried on steadily in spite of the rainy season which has now come in that locality. Up to present, a distance of about 20 miles westward from Cheng-kar-tung has been laid with rails, and judging from the present working it is generally believed that the new line may be opened to traffic within this current year.

Light Railway Proposal, Shantung.—Messrs. Hsu Pao-tien and Liang Chu-chien have secured a capital of $500,000 for the construction of a light railway from Pao-shan to Tai-an. The proposed line will have a length of about 120 *li* and will, when completed, bring Tai-an into connection with the branch of Kiaochow-Tsinan Railway, meeting together at Paoshan.

New Railway : Japan.—The proposed construction of a private railway along the eastern coast of Kabafuto, mainly for the purpose of serving the convenience of the paper mills in Kabafuto, was decided upon recently, and the railway company with a capital of ten million yen, will be established for that purpose.

Ssupingkai-Taonan Railway.—The Chengchiatun-Paiyintala extension to the Ssupingkai-Chengchiatun section already in operation, of the Ssupingkai-Taonan Line of the Chinese Government Railways promises to be opened to traffic provisionally by next November, when the next produce season gets well started. The Chengchiatun-Paiyintala section has been divided into three subsections, on which work was commenced simultaneously, and the rails are now being laid. It is 72 miles in length as against 50 miles of the Ssupingkai-Chengchiatun section, but the line traverses a level plain which is, by the way, quite fertile. The construction work has been progressing with ease, and no serious difficulty is likely to be experienced even in the rainy season. Sleepers are being supplied from Kirin way in a satisfactory manner.

Railways in Korea.—With regard to the business condition of the Korean railways for last fiscal year, an official in the Seoul office of the S.M.R. Company states that, on account of the inactivity of the transport business due to the general economic depression, the receipts of the company during the period have shown a considerable decrease, resulting in a loss of over Y.1,000,000.

When the estimates for last fiscal year were drawn up by the company, the transport business was most prosperous and nobody expected such a sudden advent of financial depression as overtook the empire last year. As a matter of fact, with the idea of making good the shortage the Company revised the freight tariff in June last year. The economic depression, however, had already set in at the time and receipts witnessed a marked decrease. To make matters worse, the transport business suffered a heavy blow through the great flood and the prevalence of cholera throughout the peninsula. To cope with the situation, the management did everything possible to curtail with the result that fuel alone showed a decrease by Y.780,000. Since the Korean railways came into the hands of the S.M.R. Company four years have elapsed, and though the Company realized a net profit of nearly two million yen for each of the first two years, that money had been invested in the railway undertaking in Korea. The last two years the Company suffered a loss of Y.1,850,000 in all and was obliged to make good that amount by a subsidy from the Tairen office.

In connection with the above it is understood that the business prospects of the Korean Railways for the current year show little improvement and rumor is afloat that further economy will be effected by a great reduction in the number of employees.—*Seoul Press.*

Harbin-Heilungkiang Railway May be Constructed.—Arrangements are being made by local authorities for the construction of the Harbin-Heilungkiang Railway, which is long needed, by Municipal bureau at Ma-kar-Jen-kow and raising appropriating a fund of $4,000,000 from the another $4,000,000 by other means. The sections between Fu-lan and Sui-hua and Sui-hua and Hai-lung will be built first.—*Chinese Press Report.*

Total Revenues of Chinese Railways.—The ministry of communications has recently promulgated a statement showing the total revenue from January 1 to April 30, 1921, of the various railways under the control of the ministry as follows: —

Name of Railway	Jan. 1 to Apr. 30 1921	Corresponding period, 1920
Peking-Hankow	$6,523,838	$191,180
Peking-Mukden	7,120,154	1,592,294
Tientsin-Pukow	4,892,461	324,890
Peking-Suiyuan	1,553,502	350,176
Shanghai-Nanking ...	1,891,485	272,449
Shanghai-Hangchow ...	851,947	135,840
Tsangting-Taiyuanfu ...	929,636	332,442
Canton-Kowloon	374,008	77,371
Kirin-Changchun	803,805	127,609
Daokow-Chinghua	252,551	7,007
Chuchow-Pingshiang ...	78,995	82,201
Chongchow-Amoy	10,184	5,563
Kaifeng-Laoyang	52,665	100,064
Canton-Hankow	480,290	24,605
Sze-Tao	205,212	78,412
Total	$26,699,736	$1,619,053

Would Extend Suiyuan Road.—The waichiaopu has suggested to the ministry of communications that, owing to the absence of communications in northwest China, progress in the construction of the North-Western Railway should be made as soon as possible. It is reported that the ministry of communications received this suggestion favorably, and is now considering a plan for the extension of the Peking-Suiyuan Railway from Suiyuan to Ninghsia.—*Reuter's Pacific Service.*

Negotiation Made for New Railway.—Tho Industrial Bank of Japan has been negotiating with the ministry of communications in regard to a loan for the construction of the Kirin-Huanining Railway, to run from Kirin through Yenchi and across the Tumen River into Korea.

Nantungchow Cotton Mill Building Light Railway.—With a view to facilitating transportation, the Dah Sung Cotton Spinning & Weaving Mill (No. 3), Nantungchow, has constructed a 12 *li* long light railway at north of the factory extending to Tsin-loong-kong, an important water way in that district. To make the transportation more convenient, a further distance of 2 *li* will be tracked, so that it can reach Tsin-loong-kong.

To Repair Light Railway.—In connection with repairing work of the Lo-yang Bridge, General Wu Pei-fu has decided to repair the light railway from Lo-yang to Loong-men first, so that materials for the reconstruction of the bridge may be transported to the working place direct without any difficulty.

Feng-Huang-Tai to Establish Railway Station.—It is reported that the Kaifeng-Loyang Railway administration is planning the establishment of a railway station at Feng-huang-tai, a town between Chenchow and Chungmai, Honan.

New Rolling Stock to Tientsin-Pukow Railway.—It is reported that the Tientsin-Pukow Railway administration has obtained the approval of the ministry of communications for purchase of 50 passenger cars from a certain American corporation.

Improvement Work on Sze-Tao Railway.—Along the Sze-tao Railway, the old bridges which were roughly built are being replaced with new modern ones. In construction of the bridge over Laohu at Sankiang-kew, much difficulty has been experienced, but the difficulty has been finally overcome, and the work is expected to be completed in another month.

The work on the branch line from Chen-chia-teng to Pei-ying-tai-lai was commenced from April 1, 1921, and the track is being laid at present. The construction work is carried on exclusively by native engineers.

RIVERS, HARBORS, WHARVES AND DOCKS

A New Port in Shantung.—With regard to the opening of a port at Tsiningchow, Shantung, it is reported that a company has been fully organized to carry out the scheme. It is said that the Shantung provincial authorities and the various ministries concerned in Peking are ready to support the undertaking. The company has already collected $3,000,000 and proposes that the government should furnish the remaining $200,000. It is understood that the ministry of finance has offered to provide treasury bonds for that amount, and that the shuiwuchu is considering the question of establishing a Customs station at the port.—*Reuter.*

Tai-Lu Lake Conservancy Work.—For the conservancy works of the Tai-hu Lake a sum of $200,000 has been allocated to Kiangsu and $200,000 to Chekiang by the Peking government. The work is being carried on by the Tai-hu Lake conservancy board under the directorship of Mr. Wang Tsing-mo. As recommended by Mr. von Heidenstam, engineer-in-chief of the Whangpoo conservancy board, a small dredging machine at a cost of about $240,000 will be purchased.

Port Improvement.—Sukeo, near Haichow, is, as mentioned recently, the proposed location of a new port as the maritime terminal of the Lunghai railway now under construction and already operating between Hsuchowfu, on the Tientsin-Pukow Railway, and Kwanyintang in Honan province. A Belgian engineer has been engaged for the last few months in an investigation, and the final location of the harbor is now dependent on the report of the engineers who are now making a survey.

Conservancy Work of Nantungchow.—At a meeting held by conservancy exports at Nantungchow, Mr. Chang Chien dealt with the importance of the conservancy work and pointed out the careful survey of rivers, sluices, etc., as first step of flood prevention. In accordance with the decision of the meeting, four surveying parties composed of native and foreign experts were dispatched to carry out the survey in various parts of the district. After the survey work many sluices will be built at important places where circumstances render it necessary. A fund of $200,000 has been secured for this purpose.

Chang-Yi-Tung as a Commercial Port.—With regard to the improvement work of Chang-yi-tung, Kirin, the northern part of the city has been opened as a commercial port with modern roads built, while the southern part remains undeveloped. In order to improve the city, work will be immediately carried out in the southern portion.

To Build a Harbor at Lien-Shon-Wan, Fengtien.—The general chinese chambers of commerce in Mukden, Kirin, Harbin and Heilungkiang and the trade unions of the Three Eastern provinces have jointly telegraphed to the ministry of agriculture and commerce requesting the opening of Lien-shan-wan as a commercial port and building a harbor there. As the plan will involve a large amount, the merchants suggested that a loan of G.$10,000,000 should be made with American capitalists in the name of Chinese merchants and they asserted that they would hold themselves responsible for the loan.

New Port in Shantung.—With regard to the opening of a port at Tsingingchow (Shantung), it is reported that a company has been fully organized to carry out the scheme. It is said that the Shantung provincial authorities and the various ministries concerned in Peking are ready to support the undertaking. The company has already collected three million dollars and proposes that the government should furnish the remaining two hundred thousand dollars. It is understood that the ministry of finance has offered to provide treasury bonds for that amount, and that the shuiwuchu is considering the question of establishing a customs station at the port.

Harbor Works, at Moji and Shimonoseki.—The Japanese diet has sanctioned an appropriation of funds for harbor, reclamation and other works at Shimonoseki to the amount of Y.3,600,000, and at Moji to the amount of Y.4,050,000.

These sums are for preliminary work, to be spread over a period of six years. In Moji it is proposed to reclaim and re-arrange the water-front so as to provide space for a wide road, an area for warehouses, a mooring wall 1,400 yards long, a coaling berth, and the usual appurtenances of cranes, etc. In Shimonoseki it is proposed to carry out reclamation and reinforcement of the water-front and to construct a small dock.

The sums mentioned above are obviously insufficient for a scheme of any great dimensions; a comprehensive plan which would solve the problem of furnishing a safe and convenient harbor, making full use of the terminal railway facilities, and concentrating in one place the now diffused activities of the two ports, does not appear as yet to have been seriously considered.

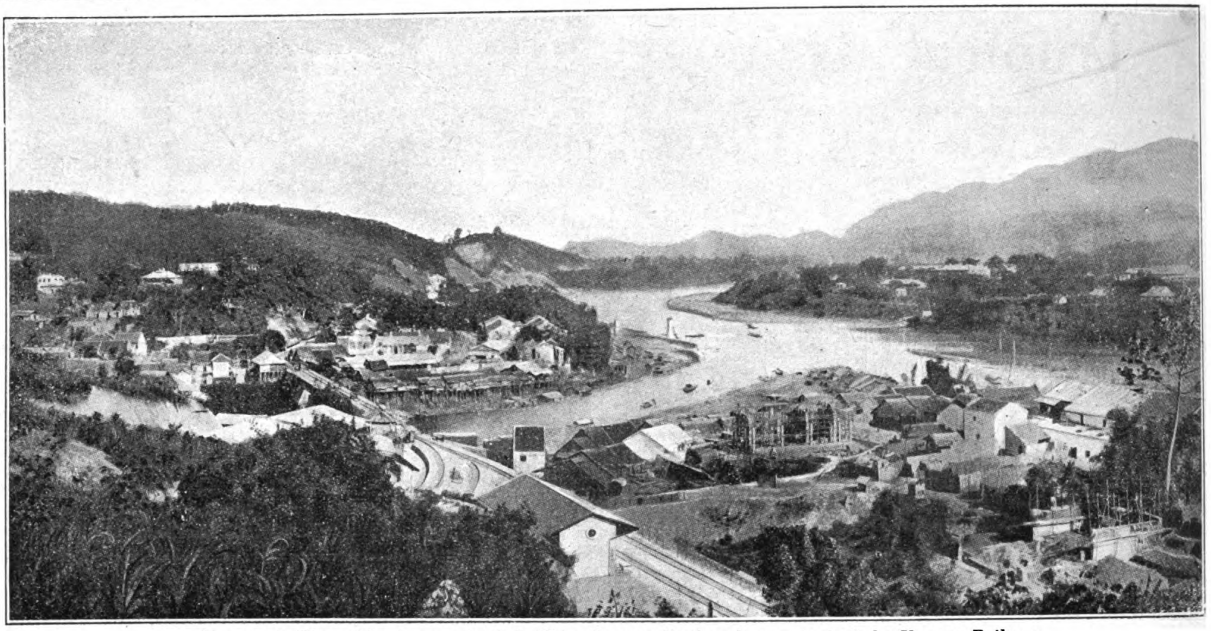
Some very imposing schemes have been talked about, but have presented difficulties which so far have proved insuperable. As for the proposed tunnel under the Shimonoseki Straits, it is stated in some quarters that it is to assist foreign trade, in others that it is for national defence, and in still others that it is to facilitate communications between Kyushu and the mainland. It does not appear clear, however, that it would make much difference to national defence, nor how it would assist foreign trade. So long as the bulk of the cargo of foreign-going ships is carried to or from central Japan, ships will go to ports in central Japan, and will call at Moji only for coal. The tunnel will not help the coal, for it is already on the Moji side.

As for the trade between Kyushu and the mainland, it is certainly active, but it is hard to believe that its volume would justify the cost of a tunnel, which would have only a limited carrying capacity, and would not be used for transporting the principal commodity, coal, which passes across the Straits.

It is considered possible that the tunnel scheme will be gradually dropped, at least for the present. It may be revived later if money becomes very plentiful; but even so, there are great technical difficulties to overcome.—*Board of Trade Journal.*

Tsiningchow to be Opened to Foreign Trade.—The proposal to open Tsiningchow (Tsining) in Shantung province to foreign trade has been approved by the central government, but the regulations to govern the commercial port have not yet been completed nor the date for the opening determined. Tsining, one of the largest cities in Shantung, with an estimated population of 200,000, is located on a spur of the Tientsin-Pukow railway, and is in one of the best wheat districts of the province. It is also on the Grand Canal, and if the plans for improving that waterway are eventually carried out Tsining is likely to become a provincial distributing centre of considerable importance. A mill equipped with American machinery, with a daily capacity of 2,400 bags, is already in operation. A modern egg drying factory, with American machinery, is established there, as well as an electric-light works, also American equipped, which supplies light for the city.

A Floating Dock on the Yangtze.—According to the Hankow native press, the large floating dock which for some time has been in course of construction by the Yangtze Engineering Works at Seven Mill Creek, has been successfully completed and launched. The new floating dock will prove a great convenience for the carrying out of repairs to vessels in the upper portion of the Yangtze.



Panoramic View of Laokay on the Indo-China-Yunnan Border, the terminal of the Yunnan Railway

The Yunnan Railway

THE official report of the Yunnan Railway for the year 1919, recently published, shows that the receipts for the year from all sources was $3,030,631.88 against $2,791,978 for 1918, including the sums collected from the Chinese government for the transport of troops and military supplies, amounting to $3,957 in 1918 and $2,110 in 1919. Reduced to francs the receipts show 16,727,094 francs for 1919, and 11,945,777 francs for 1918.

If the normal tariff had been constantly applied, the receipts would have totaled $5,515,729 in 1919 and $4,235,594 in 1918, or an increase in 1919 of 30.2 per cent. over 1918, and an increase of 31.4 per cent. in that year over 1917. If it had not been for the important diminution of the tariff due to the enhanced value of the piaster, the increase would not have been so great, especially as regards the passenger receipts in Tonkin where the increased traffic returns are due, in the main, to the low value of the piaster.

Passenger Traffic.—The total number of passengers carried was as follows:

	1919.	1918.
1st Class ...	7,756	5,848
2nd " ...	14,106	10,919
3rd " ...	120,541	79,352
4th " ...	4,225,270	3,292,282
Total ...	4,367,673	3,388,401

This shows an increase of 32.6 per cent. over 1918 for 1st class, 29.2 per cent. for the 2nd class, 51.8 per cent. for 3rd class and 28.3 per cent. for 4th class. An examination of the traffic movement shows following for the Haiphong-Laokay section of the line (the section the within Indo-China), as

	1919.	1918.
1st Class ...	7,367	5,548
2nd ,, ...	12,983	9,544
3rd ,, ...	110,527	64,204
4th ,, ...	3,131,834	1,946,495
Total ...	3,262,711	2,025,791

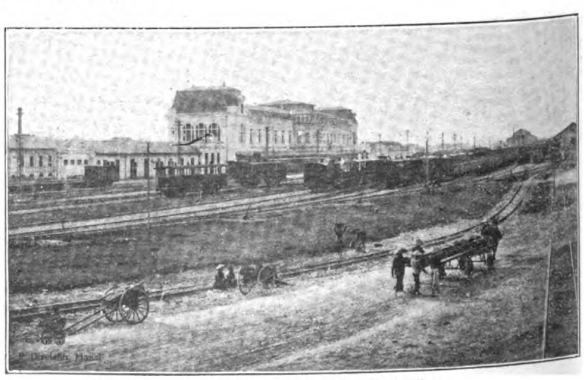
which discloses an increase of 32.8 per cent. over 1918 for 1st class traffic, 36 per cent. 2nd class, 72.1 per cent. 3rd class and 60.9 per cent. 4th class.

The traffic on the Hokow-Yunnan section, which traverses the Chinese province of Yunnan from the Red River to the capital, was as follows:

	1919.	1918.
1st Class ...	389	300
2nd ,, ...	1,123	1,375
3rd ,, ...	10,014	15,148
4th ,, ...	1,093,436	1,345,787
Total ...	1,104,962	1,362,610

which shows an increase over 1918 of 29.7 per cent. in 1st class, a decrease of 18.3 per cent. in 2nd class, 33.9 per cent. in 3rd class and 18.8 per cent. in 4th class traffic.

This falling off in the Chinese passenger traffic is due to different causes, notably, the partial shutting down of the Kochio tin mines and the uncertain political situation, to brigandage, and also to the increase in the price of 4th-class tickets, which, for three months during 1919, was .0078 per mile, for five months .0071, and for two months, between .00585 and .0072, while during 1918 the tariff remained fixed for 11 months at .0048 and only one month did it reach .0078 per mile.



Railway Station at Hanoi, Tonkin

shipping board in denouncing the port of Kobe. We have heard the same phrase used to explain the reasons why American firms could not operate in Manchuria and Shantung in direct competition with Japanese. The answer to the accusation that the archives of the American consulate in Tsingtau were filled with the evidence of Japanese underhand methods in discriminating against American trade, was fully set forth in the February number of THE FAR EASTERN REVIEW. There was no discrimination, no record of any such practices in the archives of the American consulate at Tsingtau. On the contrary, official testimony, clear and unmistakable, proved that the Japanese authorities had placed no impediment in the way of American trade at that port.

Investigations in Manchuria also fail to produce evidence of discrimination against American traders. Americans have had a hard time to establish themselves in Manchuria, and invariably have laid their failure to underhand methods on the part of the Japanese controlled railway. In the same manner, American engineering firms who flocked into China last year and failed to make good, laid the blame on the British, who, they declared, had almost a monopoly in supplying the Chinese with engineering materials and supplies. In both cases, the fundamental trouble with the American trader lay in the fact that he was doing his best to force his way on a basis of equal opportunity into markets that had been created by the loans of other powers. As far as Manchuria is concerned, American manufacturers have derived the major benefits from Japanese exploitation of its resources, but the orders for materials have either been placed direct or through the agency of Japanese firms. Had the Japanese placed these huge orders through American firms in China, the world would have heard less about discrimination.

As it is, this "subtle discrimination" is reduced on analysis to charges that the management of the South Manchuria Railway gives preferential treatment to its own nationals. There is no actual proof of such practices, but every foreigner who fails to make good in Manchuria is firmly convinced that he has been double crossed in some way or other by the railway. One hears second-hand stories of how this or that foreign firm lost out in some way or other through having to pay a higher freight rate than his Japanese competitor, but it is impossible to run these stories to earth, or ascertain the name of the foreign firm alleged to have been discriminated against. It is all very mysterious, and has given rise to the use of the phrase "so subtle that no proof is obtainable."

If pressed for proof, the investigator's attention is invited to the fact that few American firms are established in Dairen or Manchuria, and their absence must therefore be accepted as tangible evidence that they cannot exist because of this "subtle discrimination." In other words, if Americans are unable to compete with Japan in Manchuria, it must be because of underhand practices.

At a dinner recently tendered to the new president of the South Manchuria Railway on the occasion of the visit to Mukden, the American Consul-General, Mr. Pontius, was one of the speakers. He touched upon the matter of complaints and suggested that the railway company appoint special agents at the various large commercial centres who understood English and could act at once in the settlement of claims. The idea was immediately approved by the new administration, and special agents with full powers to adjust differences are to be assigned to Mukden, Newchwang, Antung and Changchun. The special agent for Mukden will be Mr. Go, a trained diplomat, who speaks English and French.

It will be seen from this, that the South Manchuria Railway authorities are also determined on their part to practice constant vigilance in dealing with matters which might be construed as subtle discrimination against foreign trade. It is a direct answer to the implied charges against the line, an open willingness to co-operate with Americans for the suppression of alleged practices indulged in by subordinate employees to annoy or discriminate against shippers other than Japanese.

The Yellow River Bridge Scandal

ON many occasions we have invited attention to the difficulties surrounding the practical working out of a construction policy for the development of Chinese railways by international co-operation, and maintained that harmony begins and ends with the floating of the loan. When the engineer steps in, friction and jealousies arising out of the method of construction and the awarding of tenders for the supply of materials, are sure to follow. It may be possible for a group of national banks to find a body of engineers representing five different manufacturing nations who can be depended upon to sink their differences and arrive at some harmonious decision concerning the materials to be used in the construction and equipment of such railways ; it may also be possible to find a similar group of engineers all trained in different schools, who will work together without friction in their actual construction. But human nature being as it is, and with the manufacturers of the five countries behind their engineers clamoring for orders, it is our firm opinion that ideal co-operation is impractical unless provision is made to eliminate these fundamental causes that make for ill-feeling. We have had occasion in the past to stress this point in connection with the practical application of the Hukwang terms, which provided for international competition in the supply of materials, and have urged that some attention be paid to this phase of the problem in devising a practical program for the consortium, in order to assure its continued usefulness.

In support of our stand, comes the lamentable aftermath to the awarding of the tenders for the Yellow River Bridge. It is not our purrpose to go into the merits of the case, contenting ourselves with noting that the incident comes to justify our position on the broad basic principle that it is impossible to bring about harmonious international co-operation in any scheme involving the placing of construction contracts of any magnitude.

In effect, the French, Belgian and British members of the Yellow River Bridge commission brought a charge of dishonorable conduct against Dr. J. A. L. Waddell the eminent American bridge specialist on the commission, who immediatedy gave their letter to the press and courted investigation and publicity. After a reasonable length of time, specific and detailed refutation of the charges were embodied in a letter from Dr. Waddell to the association of Chinese and American engineers, which was also published with the approval of the Chinese minister of communications.

The association from the outset of the controversy supported Dr. Waddell in his differences with his colleagues on the commission.

Dr Waddell says that although he had entered plans of his own in this competition these were dropped as soon as he was appointed a member of the commission by the Chinese government. He asserts that his colleagues favored the selection of a plan that would cost $1,500,000 more than is necessary and would not be the best bridge possible.

In this controversy the fact cannot be overlooked that it was Belgian and French money which built the Peking-Hankow railway, and the subsequent redemption loan, made without provisions for the purchase of materials, was furnished by British, French and Belgian capital. Any international board of engineers, on which these three countries are represented, in the very nature of things, will present a decision favoring the tender of a manufacturer of one of these countries.

This does not imply that any injustice would be meted out to an American bidder, if his price was actually the lowest, but it does mean that everything else being equal, that award would go to one of the three above-named nations, with preference to French or Belgian manufacturers. It was a mistake on the part of the Chinese government to invite an international commission to

decide upon the design and to award a contract of such magnitude made possible by a Belgian and French loan. Ideally and ethically they were right, but the aftermath provides one more proof that ideals cannot always be applied in a practical manner.

It is unfortunate that Dr. Waddell provided the opportunity for his conduct to be misunderstood in such an important international competition, and while we can appreciate his sincerity and desire to procure the best bridge design at the lowest cost for China, the fact remains that China invited an international board to judge the designs and award the contract. Dr. Waddell's views must, therefore, give way before the majority. Aside from all other aspects of the deplorable incident, it provides a lesson, which, if taken to heart, will forstall further misunderstandings, by the application of practical methods in the place of sentimental ideas in the construction and equipment of new Chinese railways by international finance.

* * *

The Future of Shanghai's Harbor

WITH the arrival in Shanghai of Major-General W. M. Black, and Mr. P. Ott de Vries, C.E., who have been nominated for membership on the committee of consulting engineers who will advise on Whangpoo river conservancy, the efforts of the Whangpoo conservancy board in its investigations may be said to be well on the way to fruition. When the other members of the commission arrive, conferences will be held to consider and to advise upon the needs and possibilities of Shanghai's harbor.

The investigation to be pursued by the conservancy board includes a technical-economical consideration of all the technical accommodation and terminal (wharf, pier and cargo-handling) facilities of Shanghai and a report on the further harbor development possibilities at Shanghai :—

(*a*) With the approaches to and limit of draft in the harbor remaining as at present 28—30-ft.

(*b*) For the probable maximum draft of ships on the Pacific.

It was specified in the original program that for the formation of the committee one member should be chosen from amongst leading harbor specialists in the home countries by each of the leading shipping nations (including China) at Shanghai as represented on the Whangpoo conservancy consultative board, the engineer-in-chief of the board to be an *ex-officio* member. Nominations have now been made as follows :—

NOMINATED BY :	*MEMBER :*
American Member of the Whangpoo Conservancy Consultative Board.	MAJOR-GENERAL W. M. BLACK : formerly chief of U.S.A. engineers (retired), consulting engineer of the firm of Black, McKenney and Stewart, Washington, M.AM.SOC.C.E.
By British Member of W.C.C.B.	F. PALMER, C.I.E., M.INST.C.E., consulting engineer of the firm of Rendal, Palmer and Tritton, London Formerly engineer-in-chief, port of Calcutta, and consulting engineer to the port of London authority of which he was chief engineer 1909-13.
By Chinese Member of the W.C.C.B.	P. G. HORNELL, C.E., M.SWED.SOC.C.E., consulting engineer of the firm of Aktiebolaget Vattenbyggnadsbyran (hydraulic engineering bureau), Stockholm. Consulted by the ports of Gothenburg, Stockholm, etc.
By Dutch Member of the W.C.C.B.	P. OTT DE VRIES, C.E. Until recently head of department of public works, Netherlands India. Now retired.
By French Member of the W.C.C.B.	L. PERRIER, ingenieur en chef du corps des Ponts et Chaussées (Paris). For 20 years engineer on the Suez canal.
By Japanese Member of the W.C.C.B.	ISAMU HIROI, C.E., elected dr. engineer (Tokio), formerly engineer-in-chief Hakodate and Otaru harbor works and professor Tokio University. Consulting engineer to government railways. Member of harbor investigation committee, Tokio. M.AM.SOC. C.E.
Ex-Officio Member, appointed by the Conservancy Board.	H. VON HEIDENSTAM, C.E., Capt. Royal Swedish Corps of Engineers, M.INST.C.E., M.AM.SOC.C.E., engineer-in-chief, Whangpoo conservancy board.

The commission is to meet in Shanghai on or about October 15 next and will stay about six weeks.

The task before this commission is of great difficulty as it will have carefully to weigh a number of conflicting technical and economical considerations.

Amongst the principal questions are—

(1) The possibility of improving the Fairy Flats,

(2) The alternative question of a Hangchow bay approach, and

(3) The provision of improved berthing accommodation and general port improvement, even with approaches remaining as at present.

The schemes to be submitted to this committee include a general consideration of all conceivable possibilities, but more especially various suggestions for dredging or training the great Yangtze bar known as the Fairy Flats, designs for a *port de vitesse* on the Hangchow bay as an alternative to an improved Yangtze approach, and lay-outs for first-class wharf accommodation in the Huangpu and elsewhere.

It is also understood that very important and illuminating studies have been made of the economic side of the whole question.

In order to provide proper data for these projects a special department has been organized, surveys have been made on land and water over all the areas involved, hydrological and geological studies have been made, and expert engineers in the home lands have been consulted on detail problems. A series of special reports on data have been issued and the final plans and estimates of the apparently most favorable alternative projects will in a few days be ready for the commission's consideration.

The larger problem has necessarily to be considered from the point of view of the probable draft on the Pacific 30 years from now.

But even if the draft on the Pacific is to remain at 30 feet Shanghai harbor needs improved approach and improved wharfage and berthing accommodation, as well as improvement of its cargo handling.

* * *

China's Yangtze River War

THE conflict which wages on the shores of the Upper Yangtze River bespeaks of more than the ordinary summer movements that have been the order of things since the abdication of the Manchus. It is impossible to follow in minute detail the machinations which have led to the present imbroglio. At one time the idol of democracy, the saviour of the Chinese people, the popularity of General Wu Pei-fu has fluctuated till not long ago he was denounced as being the betrayer of the masses. And now there

Regulations for Purchasing Chinese Railway Materials

THE Chinese government railway department purchases annually supplies of all kinds to the value of $20,000,000, the orders for which in the past have been placed by the managing directors of the various lines without reference to the ministry of communications. The difficulty in centralizing these purchases has arisen from the operation of loan terms and conditions which gave certain preferential rights to purchasing agents, a condition, which still exists, but is more or less ignored by the authorities in their desire to reduce expenses and concentrate the purchasing under one central bureau. This phase of the situation is dealt with in another article in this number of THE FAR EASTERN REVIEW. Under the direction of Minister Yeh Kung-cho a policy of efficiency and economy was introduced into the administration of the ministry of communications for the purpose, amongst other things, of purchasing materials, and the new minister, Mr. Chang Chih-tan, has authorized the drafting of a new set of regulations to govern the purchase of railway supplies in the future. The new director-general of railways, Dr. C. C. Wang, was also heartily in favor of some such scheme and prepared a memorandum which was approved by the minister and cabinet, and is now in force. It will be noted that public tenders, either limited or unlimited, are to be invited for all requirements exceeding $5,000 in value.

I. Specifications, Drawing and Samples of Materials

1. The term "materials" as employed in these regulations is applied to all materials and articles used on the railways and includes locomotive, passenger and freight cars, track materials, machineries and tools.

2. In connection with every purchase of materials by the railways, complete specifications and drawings or proper samples must be previously prepared, to be used as standards of the materials purchased.

When materials are received, their acceptance or rejection will be made, after inspection, in accordance with the requirements of the specifications, drawings or the samples.

3. Sufficient copies of specifications and drawings must be prepared to be given to those who desire to submit tenders for supplying the materials. When samples are furnished one or several of them are to be placed at a definite place for examination only by the suppliers if no more can be provided.

4. Chinese, English or French language may be used in the specifications and drawings. If the original is in English or French while the materials can be purchased in China, a translation in Chinese is to be attached. If the original is in Chinese while the materials have to be purchased abroad, attached translation in English or French is to be made.

II. Invitation of Tenders

6. Whenever any single purchase of the same material of several similar materials is estimated to be over $5,000, Chinese currency, an invitation of tenders is to be made. Special conditions under railway loan agreement are to be excepted.

7. When a material is produced solely by one manufacture and the exclusive agency for selling the material is held by one concern, and if the material cannot be substituted for by any other material, no invitation of tender is needed. If the agency is not exclusive, an invitation must be made to the several agents to submit their tenders under conditions same as those mentioned in Article 6.

If any supplier has made a long term agreement with any railway to furnish a certain material or number of materials even when that supplier holds no exclusive right otherwise of selling that material or those materials, no invitation of tenders is to be made. But the railways concerned are to report such agreements to the ministry within one month after the promulgation of these regulations.

When the railways desire to have these agreements renewed after their expiration they must ask for the approval of the ministry by stating the reasons for their renewal.

8. Invitation of tenders may be either limited or unlimited.

9. A limited invitation of tenders is made when the railways invite by correspondence only those reputable and reliable firms or manufactures to submit their tenders. For each invitation of this kind, three competitors at least must be selected for the purpose. Those who have never supplied materials to the railways before and the newly established firms or manufacturers may also be invited to submit tenders when they are found by the railways to be capable of supplying the materials needed or when they are willing to make proper deposits with the railways to insure their good faith.

10. Unlimited invitation of tenders shall be made by the railways through advertisement in the well-known newspapers at suitable localities and is open to all who are interested.

11. In limiting the period for submitting tenders, sufficient time must be allowed for the firms to carefully study the specifications, drawings or samples and to make their estimates. When the materials have to be purchased abroad, further allowance must be made for the firms to mail the specifications and drawings and to secure their quotations or any other information by cabling.

III. Deposits

12. When the invitation of tenders is unlimited, those who wish to submit tenders are required to make each a deposit with the railways in addition to the payment for the cost of specifications and drawings.

13. The amount of the above-mentioned deposit shall be fixed by the railways according to circumstances.

14. The deposits will be returned to the bidders after the selection of tender has been made except the one whose tender has been selected and whose deposit may be transferred to the deposit for the contract.

In case the supplier whose tender has been selected announces his inability to supply the materials or fails to call at the railway offices for the signing of the contract within the stated period after the announcement of the selection of tender, his deposit made at the time of submitting the tenders is forfeited and also his right to supply the materials will be annuled.

15. The supplier when tender has been selected shall at the time of signing the contract, make a deposit with the railways.

16. The amount of this deposit for the contract shall be fixed by the railways according to circumstances and shall be clearly stated in the specifications.

17. The deposit for a tender or a contract shall be either in form of cash or acceptible bonds or a letter of guaranty covering the sum of cash required from any bank accepted by the ministry of communications.

IV. Supervision over Tenders

18. Whenever the estimated cost of the same material or several similar materials to be purchased exceeds $5,000, Chinese currency, the railways shall report to the ministry: (*a*) the kinds of materials to be purchased with specifications drawings or samples accompanying the report; (*b*) the amount and estimated cost of each material to be purchased; and (*c*) the way in which tenders are going to be invited (limited or unlimited), the date fixed for opening the tenders and the amounts of deposits required for tenders and contracts. When the invitation of tenders is limited the names of the firms or manufacturers to be invited shall also be stated. Only after due approval by the ministry the railways can issue invitation of tenders either by correspondence or through advertisement in newspapers.

19. The letters or advertisement for inviting tenders shall contain these words "with the approval of the ministry of com-

munications," this invitation is made to the suppliers to submit their tenders.

20. Irrespective of whether the invitation is limited or unlimited, all tenders submitted shall be opened on the prefixed date at the specified hour.

21. Whenever the estimated cost of the materials exceeds $50,000 a delegate or delegates from the ministry of communications must be invited to be present at the time of opening the tenders.

22. The result of the opening of tenders must be reported to the ministry and, before the signing of the contract, the tender selected and the drafted contract shall be sent to the ministry for approval.

23. When several bidders and the manufacturers whom they represent are equally known and also when their terms of delivery and payment, etc., and about the same, the one whose bid is the lowest shall be selected to supply the materials.

24. Before the opening of tenders, or after the opening but before the signing of the contract, whenever it is descovered that the bidders have raised the prices through general agreement or attempted in any other way to hold up the government, the railways shall report to the ministry of communications to have the tenders submitted by those bidders made disqualified and the materials purchased in any other way deemed adversable under the circumstances.

25. All purchases of materials by the railways not in accordance with Articles 6, 18, 20, 21, 22 of these regulations are hereby disapproved and shall not be recognized except in case of *force majeure* when special approval can be requested for.

V. Supplementary

26. Amendments to those regulations shall be proposed by the ministry of communications and become effective after they have been passed at a cabinet meeting.

27. All the above regulations shall be effective from the date of promulgation.

Bang! Goes Another Door

THE *Chicago Daily News*, of September 1, publishes what purports to be an amazing contract between a Chicagoan and the Chinese republic, and in view of criticisms arising out of the Cassell Coal Mining Concession with the former military government of Canton and the opposition of the present southern cabinet towards its ratification, the following information is extremely interesting, significant and important, *if true*. And, if the story should be true, we may as well forget about the "Open Door." As Dr. Ma Soo, the delegate of the Canton government in Washington, has not officially denied the story of the contract, it is now up to Canton to declare itself. The Chicago paper says :

"George H. Shank, who occupies offices in the Stock Exchange building, becomes a partner with the 'Government of China' in twenty-year industrial development operations. He is given a practical monopoly of business concessions in the whole yellow republic. He undertakes to interest American business in China on an unprecedented scale. The government headed by Dr. Sun Yat-sen, at present known as the 'Government of South China,' which aspires to the conquest of the whole country and which has already overrun more than half of it, agrees, according to a contract he holds, to pay Shank one-third of the net profits of all industries organized and promoted through his efforts, as well as 25 per cent. on the purchase price of all material that may be bought from the United States government.

"The South China government pledges itself to issue a preliminary bond flotation of $100,000,000 gold, 8 per cent. interest, to be used in the promotion of industrial development. If conditions warrant, other bonds will be issued. Their marketing will be left entirely to Mr. Shank. He will offer the bonds to American firms interested in China's development.

"Mr. Shank some time ago gained fame when he presided over the consular court at Shanghai.

"The first $100,000 worth of bonds has been used up long ago, says Mr. Shank, and $190,000,000 more promised to eager investors. The total issues of the South China government may amount to $3,000,000,000 or $4,000,000,000, he declares. Eighty-five large American corporations are said to have been interested, among them banks, railroads, construction firms, electrical houses, coal companies, etc. Contracts have been let, he says, for the building of many miles of roads and the entire reform of China's electricity system is planned.

"The government, which has signed this amazing contract, has been recognized by no foreign government. Springing from a revolution in 1917, it first proceeded to establish order in the province of Kwangtung (Canton) and from there to radiate out over the south of China. Late dispatches indicate that its troops have crossed the Yangtze-Kiang and are driving the Peking forces to the northward. It claims to have a popular mandate from a Chinese parliament sitting at Canton."

It would be interesting to learn the names of the eighty-five large American corporations alleged to be associated in this deal, and what steps, if any, the American government has taken to inform them of the risks they are running. Looking at the story dispassionately, it would seem that after all the chances of Mr. Shank and his syndicate to get their money back are almost as good as those of other Chicago financiers who have loaned money to Peking, for, unless Peking can squash Canton (a highly improbable termination to China's troubles), some compromise will be necessary, in which debts incurred by the South will be recognized and incorporated in any general reorganization loan. If, on the other hand, President Sun ousts President Hsu, the Shank syndicate will have to be recognized and, perhaps, added to the American group in the consortium. It looks like an even gamble after all. Any further speculation will only lead to a headache.

A Book Review

TRAVELS OF A CONSULAR OFFICER IN NORTH-WEST CHINA. By Eric Teichnan, C.I.E. Published by the *Cambridge University Press*. Price 25s. net.

It is not improbable that the reading of this book by anybody other than one who contemplates going over the same trails and by-ways will prove to be somewhat of an effort. The general reader will be led over roads, through towns, across frozen streams, at certain times on certain days ; he will be awakened at early hours of the morning to start on a day's travel which is to be but slightly dissimilar to that indulged in on the previous day and which has been planned after due disregard for supposed obstacles which Chinese officialdom declares to exist ; so that all in all, his day in and day out are so much of a sameness that as time goes on the journeys become a trifle monotonous. He wishes perhaps that some alarming adventure would make a break in the steady progress, the precise and uneventful journey. If only a pheasant shoot, taking ten pages of graphic English to describe, were indulged in on the way, something to lend color, a little personal enjoyment, if not from the æsthetic point of view at least in the daily contact with the native whose sense of humour everywhere in this vast country is such as to enliven whenever contact that is not inhuman is made. If the general reader is content only to note the type of pony that is used in the land over which he is lead in travel, the topography of this land, and the distances between each point of travel, then he will endure the journeys and will derive much benefit in the way of really authoritative information. He will also part from the author the gainer in a vaster knowledge of China, especially of a territory so little known to foreigners, and he will, above all, be accurate in such information as will be of great help to future travelers over the same regions. A mind intent upon imparting correct information is, as a rule, steeled against impressionistic deviations, particularly if a not too bulky volume is its goal, so that while much has been lost to the romanticist, the gain to the realist has been great.

Apart from some discussion in regard to China's administration of interior places and an expression of views as to "the need for reform in the type of Christianity now being propagated amongst the Chinese," views which are unquestionably those held by a large number of non-missionary sojourners in these parts, some of whom, no doubt, decry even the presence of Christians other than school teachers and doctors in a country where other religions seem to fulfil, very admirably, the correct usages and requirements of any relegion, there is little in the book except accurate and somewhat tedious travel as we have already implied. But this in itself is so important in a land where correct knowledge of interior places is quite inadequate, that considerable credit is due to the author for the faithful record he has presented of his travels. It is a fine contribution to the meagre store of information on China's hinterland and as such is deserving of commendation.

C. L.

est to insure an improvement in the nation's foreign trade. It is rumored that the government, through the Yokohama Specie Bank, will make a loan of Y.2,000,000 at low interest to finance Russian trade.

Java's Trade Prospects.—The annual report of the president of the Java Bank says that the general economic situation in the Netherlands Indies is not brilliant but there is no question of an economic collapse.

The normal demand for Indian products will return as soon as normal world-conditions return.

The conditions of trade, industries and agriculture in the Dutch Indies need not give reason for any great anxiety for the future.

The position of the Java Bank and the mutual co-operation between other banks in the Dutch Indies is a guarantee that the difficulties of the Dutch Indies will be overcome earlier than elsewhere.

The Dutch Indies is not standing on the eve of an economic downfall. The Java Bank dividend is 35 per cent.

COMMUNICATIONS

A New Line Proposed, Chang-Nu-Shan.—A plan has been prepared by several prominent figures of Chang-nu-shan, Chekiang, for the construction of a motor-road or a light railway in that city to facilitate communications between Chekiang and Kiangsi, and the proposal is under consideration of the local magistrate.

North-West Automobile Transportation Co.—It is stated that a certain ambitious Chinese capitalist will give financial support to the North-West Automobile Transportation Co., Kweihua, and its rapid improvement in business is therefore expected. An autobus service will also be inaugurated between Pao-der-ching and Wu-yuan and additional lines will be opened from time to time.

DEVELOPMENT

Singapore's Needs: $100 Million Scheme.—At a special meeting of the Singapore municipal commission, the president and the chief engineer outlined the needs of the town and the bringing up of all the departments to a satisfactory state, involving the spending of $100,000,000 in ten years. The scheme needs the flotation of a loan and also an increase in the rates to 32 per cent. together with government grants and fresh sources of revenue. The meeting approved the scheme.

The requirements of Singapore, according to a summary of the report made by the *Free Press*, are :—

- More water now and a margin of safety for the future.
- Eighty-five per cent. of the roads to be reconstructed.
- Water-borne sewage for the other 98 per cent. of houses.
- Electric light for streets and houses.
- Cheap and efficient tram service.
- Re-housing schemes and arterial roads.
- New abattoirs, new municipal offices, houses for staff, new small town hall, landing facilities and extensive reclamation works.

New Corporations Under Organization.—According to latest report to hand, the following corporations are being organized :—

- Shih Sing Agriculture and Labor Bank, Waiping, Chihli.
- Cereals Exchange of Suiyuan by Mr. Li Ngaoching.
- Kwei-Sui Electric Light Plant at Kwei-sui by Mr. Yung Yao-chen.
- Kung Lee Coal Mining Co. by Mr. Feng Kungdoo.
- Song Huh Chen Leather Co. by Messrs. Tser Song-dang and Chang Ting-kai.
- Wang Jao Dyeing and Weaving Co., Kiangsu.

Registration of New Corporations.—According to report to hand, the following corporations have been lately registered with the ministry of agriculture and commerce :—

- Chow Chang Telephone Co., Chow-cheng, Shantung
- Tah Foong Dyeing Co., Ltd., by Mr. Yue Pao-shan.

Development of Sungkiangchin, Heilungkiang.—With regard to the opening as a commercial port of Sungkiangchin, a town in Heilungkiang situated on the northern bank of the Sungari River opposite Harbin, a series of schemes has been drawn up by the port work office, the following being a summarized account :—

(1) A strong modern embankment will be raised along the Sungari River from the iron bridge of the Chinese Eastern Railway over the Sungari River to Foo-lan Sugar Factory, a distance of about ten *li*, and in future wharves will be built at suitable points.
(2) Three main streets each having a width of 110 feet to be reserved for laying of tramway track, and many branch streets with a width of 80 feet will be built.
(3) A light bridge will be built over the Sungari River to connect the port with Harbin.
(4) A railway costing about $6,000,000 will be constructed from the port to Hai-lun, about 500 *li* in length.

Registration of New Corporations.—According to latest report to hand, the following corporations have been officially registered with the ministry of agriculture and commerce :—

- Dung Woo Match Box Factory, Chekiang.
- Kwang Hua Electric Light Plant, Pengpu.
- Yue Ching Flour Mill, Chihli.

ELECTRICITY

Formosan Hydroelectric Project.—The Formosan hydroelectric project is to be carried through, reports Commercial Attaché James F. Abbott, which is contrary to his previous impressions on this matter. The copper for the transmission lines has been bought, taking advantage of the present low prices. This project was reported in further detail in *Commerce Reports* for June 10, 1921.—*Commerce Reports.*

New Electric Light Plants Under Organization, Kashing.—Mr. Shun Nien-zai has secured permission of the Kashing authorities to open an electric light plant in Ka-zai, a district near Kashing. Mr. Chu is proposing a similar organization at Pu-yuan-chen, Kashing, and another electric company at Sin-dung-chen, Kashing, will probably be established in October.

Electric Light Plant Established, Hwai-ying—After registration with the ministries of communications and agriculture and commerce, the Lee Hwai Electric Light Co. has officially opened for business.

A Hydro-Electric Scheme.—Reuter's service from Tokyo mentions the scheme under way to establish the Abukumagawa Hydro-Electric Co., and the Tokyo Electric Transmission Co. The first will have a capital of 10,000,000, and develop 55,000 kw. by harnessing the Abukuma River, Fukushimaken, while the other company will have a capital of Y.30,000,000, and supply this power to Tokyo. Application has also been made to the government for a charter to construct a high-speed electric railway between Tokyo and Nikko, a distance of 80 miles. Under this scheme it is proposed to cover the distance in two hours.

Electric Plant is Planned; Rubbish for Fuel.—Suburban residents of Tokyo who have been suffering from the accumulation of rubbish and waste materials amounting daily to about 25,000 *kan* in weight recently decided to utilize it for fuel of electric power stations. It was decided at the meeting of the residents of Shibuya, Sendagaya, Yodobashi, Okubo and other suburban districts in the western outskirts of Tokyo held recently that two power stations installed with furnaces for consuming rubbish should be established with the capital of Y.500,000 near the crematory at Okamidani, Yoyahata, and the Gunritsu Hospital at Kashiwagi, Yodobashi, as a joint enterprise of the seven suburban districts.

According to the plan, 5,000 *kilo* of electricity is to be gained by the daily consumation of 25,070 *kan* of rubbish and the construction of the power stations is to be contracted for immediately. As a result of investigation carried out in Yokohama the rubbish and wastes in Japanese towns are said to contain twice the amount of combustible materials compared with that in England. It is estimated that the enterprise will yield a daily profit of Y.388 or 5 sen per *kilo*. The proposal is expected to be launched soon, according to the paper.

Some Electric Light Plants Under Organization, Soochow.—Since the introduction of electric light to Wang-tee, Soochow, many towns of the district are contemplating the organization of electric plants. In Hu-kwan a company has been promoted by Mr. Chang Chung-tsing and is expected to operate within this year, machinery having been ordered from Shanghai. In Mo-do-tze a similar plant is also being organized by Mr. Nieh and operators will begin as soon as the machinery ordered from Shanghai has been installed.

ENGINEERING

Suction Gas Plant for China.—Attention is being drawn to the demand for suction gas plant in China. Its relative cheapness appeals strongly to the Chinese. Whilst the course of exchange is just now retarding the installation of new machinery on a large scale, the demand for new plant by local electric lighting companies is becoming increasingly urgent. In these circumstances, the employment of suction gas is recommended. In the centres most concerned coal is obtained locally, anthracite usually being available, and its price is not subject to the vagaries of exchange. The installations of suction gas plant at present in operation have created a very favorable impression. Several concerns in China supplying light and power are taking steps to obtain additional capital. As they must soon come into the market for machinery for extensions and renewals, it is believed that an important potential demand is developing for prime movers operating on suction gas.

Engineering Works Inaugurated, Hsuchow.—As a result of industrial development in Hsuchow, there has been a great demand for machinery and other engineering tools in the city. With this in view, Mr. Nu Hsian-ting, proprietor of Tsing Heng Printing House, has opened the Tsing Shun Engineering Works to manufacture weaving machines, gins, printing machines, etc.

Chinese Iron Works Co., Woosung.—The Chinese Cotton Mill Owners Association, Shanghai, is organizing the Chinese Iron Works Co., at Woosung, to manufacture machines and engineering tools for cotton mills' use. The company is capitalized at $300,000 in 3,000 shares of $100 each, and the factory building on a site of 40 *mow* will be completed at the end of the year.

Orders for German Machinery in China.—It is reported that Mr. Kokan, manager of Simens China Electrical Engineering Co., has recently made a bargain for supply of machinery and engineering tools to a new coal mining company which is to be situated at Kung-chen-jao, Hangchow, organized by General Lu Yung-hsiang, tuchun of Chekiang, with an object to exploit coal resources in the vicinity of Hangchow and to melt and cast mineral products actuated along the lower courses of the Yangtze. A heavy shipment of machinery including 6 tramcars and various kinds of electric supplies have been ordered from Germany by Mr. Kokan on behalf of the proposed mining company and Shanghai Chinese Tramway Co., and a part of the machinery has been already carried to Shanghai by Japanese steamers.

COMMERCIAL FINANCE

A New Trust Company, Tientsin.—General Li Yuan-hung, ex-president of the republic of China, is organizing the Hua Chen Trust Co.

with due observance of certain restrictions, which are fully stated in the regulations, a copy of which may be inspected at the department of overseas trade, 35 Old Queen Street, London, S.W., 1.

Development of Copper Resources: Netherlands Indies.—H.M. consul-general at Batavia reports in the *Board of Trade Journal*: Since the discovery of rich copper deposits near Taninj, in South Timor (see the *Journal*, of 25th March, 1920, page 442), extensive exploring and developing work has been carried out by the Dutch government geological department, and, judging by the quantity of miscellaneous machinery and hand tools that have recently arrived at the mine, and the number of whites engaged, the deposits are assuming some importance.

It has been reported that in the neighboring district tin has been discovered equal in richness to anything yet found on the Island of Banka. Should this be the case it will lead to important developments in Timor, and it is advisable that the future working of these mines should be watched with a view of United Kingdom firms supplying the necessary plant and machinery.

"It has been reported that in the neighboring district tin has been discovered equal in richness to anything yet found on the Island of Banka. Should this be the case it will lead to important developments in Timor."

Japanese Opening Shantung Coal Mine.—Some Japanese interests have associated themselves with the Shantung officials for the organization of a coal mining company to develop the mineral wealth at Nan-ting-chen in Tze-chuen-hsien, Shantung. The property covers an area of over 600 square *li* and the coal deposit extends 7-ft. 5-in. in width. Twenty-four parallel seams have been proved and the deposit is said to be sufficient for supplying the whole province of Shantung with fuel. The new company is capitalized at $6,000,000, of which the Japanese have provided $3,000,000 and the rest is to be subscribed by Chinese officials.

New Coal Mine to Operate.—The industrial commissioner at Mukden has permitted Mr. Li Pai-chu to open the coal mine at Shar-kar-wai-tze in Nee-hsien, Fengtien, which covers an area of over 900 *mow*. A capital of $70,000 has been raised by Mr. Li to undertake the enterprise.

Operation of Mineral Resources Granted.—According to latest reports, the ministry of agriculture and commerce has permitted the following concerns to operate as mentioned :—

Liu Ching-sun to a open coal mine at Shih-hu-chen in Liu-hu-pai, Fengtien.

Wu Cho-kan to open a coal mine at Yang-lu-tung in Nih-hsien, Fengtien.

Ma Tze-jao to open a coal mine at Sun-dee-shan in Fu-kao-ching of Taiyuanfu, Shansi.

Wu Chung-hsu to open a lead mine at Ma-der-shan in Hsu-chang, Chekiang.

Wang Yao to open a coal mine at Si-kao-kiu in Yang-l-kiu, Chihli.

Shiao Yu-ying to open a coal mine at Si-kiu in Wong-shan and at Lung-shai-kao in Wai-ping, Chihli.

Chen Sheng-pao to open a coal mine at Dah-lu-shur-kiu in Tung-hua, Fengtien.

Shu Chen-deng to open a coal mine at Feng-ma-kiu in Yee-tung.

100,000 Tons Iron Ore from Johore to Japan.—The other day, a Weltevreden correspondent asked whether it is true that 5,000 tons of iron ore is being shipped monthly from Johore to Japan. Another correspondent says he does not know the quantity but export does take place, the ship lying outside, near Pengarang and after loading she sails direct for Japan.

Another correspondent states that the Nanyo Ironworks (Japan) has a concession from the Johore government to work the ore at Batu Pahat.

The Mitsui Bussan Kaisha have a contract to ship 100,000 tons this year to Japan. No doubt details of this new industry will be given officially in due course.—*Straits Times*.

OIL

Petroleum Production in Japan and America.—The output of petroleum in America is reported to be steadily on the increase and the amount turned out during 1920 indicated a gain of about 20 per cent. as against the preceding year. The annual production of petroleum in America now represents 14 per cent. of the total world production, while the output of the same in Japan is decreasing year by year since 1916, when a record output of 2,643,175 *koku* was obtained. The amount of petroleum turned out in Japan during the past six years in comparison with that of America is as follows :

	Output in Japan *koku*	Output in America *koku*
1915	2,613,281	281,104,104
1916	2,643,175	300,767,258
1917	2,600.207	355,927,716
1918	1,230,253	355,927,716
1919	2,070,296	377,719,000
1920	2,087,001	443,402,610

Vegetable Oil as Fuel, East Indies.—The possibility of using vegetable oils as fuel has often been considered, and among the oils tested in recent years are castor oil, ground-nut oil, and palm oil. The two former have not proved very satisfactory, and ground-nut oil, in any case, would be too expensive; but in the case of palm oil the tests carried out recently have given very promising results. Obviously, it would be a great advantage to be able to use vegetable oils, for the supply of these is continuous or perennial, differing fundamentally in this respect from a mineral like coal or petroleum. Enormous supplies of palm oil are available in West Africa, and the supply in that part of the world alone could be made practically unlimited, to say nothing of the great extensions of oil palm cultivation to other parts of the world, notably the East Indies. Tests with this oil as a fuel were first begun in 1914 and resumed again after the war by a Belgian company the Omnium Africain—since amalgamated with La Compagnie Generale du Congo. It has a total capital of 20,000,000 fr. and its chairman is M. Renkin, the late Belgian colonial minister. A large English firm is also interested in the same problem, and has carried out some tests in the Congo which have proved very satisfactory so far. Both companies are largely interested in the oil palm industry, and the production of palm oil and palm kernels, and were not slow to realize the great economic importance of being able to use palm oil, especially low-grade unrefined palm oil, as an engine fuel. The matter is of particular importance in the Congo and other parts of the tropics, were fuel, both for industrial purposes and also for river navigation is extremely costly. The new fuel should be of the utmost value in the development of tropical industries. The engine-running tests were carried out in Brussels with an 8 h.p. Swedish engine, the Drott, which is a two-cycle semi-Diesel engine of simple design and strong construction. Palm oil is not entirely liquid at ordinary temperatures, so that it is necessary to have a specially heated feed tank for keeping the oil in a perfectly liquid state; and for the same reason it has so far been found necessary to begin and end the run with ordinary petrol. A small petrol tank is therefore provided in addition to the palm oil tank. It was found that low-grade unrefined palm oil containing a comparatively high percentage of free fatty acids could be used, the fatty acids being almost completely burnt, and there was no corrosion. This principally in British hands, the demand being supplied by the United Kingdom to the extent of 54 per cent., Penang and Singapore supplying 25 per cent. and Australia 10 per cent. 1918 saw no import from Great Britain whilst the British colonies supplied but a small quantity. On the other hand the United States which in 1913 were still excluded from this trade, supplied 90 per cent. in 1918 and 73 per cent. in 1919 of the total import into Java and Madura. The import statistics for the year 1920 show that Holland and Great Britain have once more conquered part of this trade, but this does not alter the fact that the greater part of the demand is supplied by the United States.

Imports of Oil: Japan.—According to a report to hand, Japan imported during the first four months of this year oils amounting to 236,500 gallons valued at Y.1,875,015. The details are as follows :

	Volume gallon	Value Yen
Crude oil	17,541	47,406
Naptha	78,999	791,430
Illuminating oil in cans ...	4,000	39,600
Illuminating oil not in cans	89,767	484,120
Mineral oil	460,191	512,459
Total	236,500	1,875,015

RAILWAYS

Receipts of State Railways, Japan.—According to official returns, the income from state railways during July last totalled Y.29,970,525, a gain of Y.4,138,210 as against the corresponding month of last year. The total receipts during the first three months of the current financial year beginning with April stood at Y.126,565,491, an increase of Y.10,669,246 as compared with the same period of last year, the average receipt per day per mile being Y.147.23. The details are as follows :

	July	April-July
Passengers carried	32,270,066	153,098,851
Freight carried (tons) ...	4,228,635	17,184,249
Receipts from passengers...	16,813,607	72,895,074
Receipts from freight ...	13,156,918	53,670,417
Total receipts (yen) ...	29,970,525	126,565,491

A New Railway in Fengtien Planned.—General Chang Tso-ling, inspector-general of Manchuria, has formulated a plan for building a light railway in the north-eastern part of the province of Fengtien. It is said that the government is ready to set aside $5,000,000 for the purpose, and that another $5,000,000 will be subscribed by the Chinese community in Fengtien.

Tokyo Subway Construction.—The proposed construction of a subway in the city of Tokyo has received much publicity in the Japanese newspapers during the past six months, writes Trade Commissioner H. A. Butts. Some of these news items have made it appear that it was only a matter of a few months before actual construction would be begun. One paper stated that at a regular of shareholders of the Tokyo Subway Co. held recently it was announced by officials that the geological surveying or experimental boring that is now being conducted along the proposed trunk line would be finished within this year and that in 1922 actual work would be started with the intention of finishing the trunk line by 1924. According to Mr. Butts the preliminary work thus far accomplished has given the construction company cause for optimism, as the subsoil has been found to be clay and sand, a favorable base. Representatives of the company have been sent to New York for a personal study of construction work. They are favorably inclined toward American machinery and will, so far as possible, limit their purchases to American products. It would therefore seem that American manufacturers of every sort of subway or tunnel-making machinery should consider the Tokyo subway as a possibility to be developed within the next two or three years.

Tenders Invited.—The Chinese Eastern Railway Administration invites tenders for the supply of 450 tons sheet iron roofing, also for a number of door and window accessories.

Inauguration of Chenkartung-Beiyuantailai Railway.—According to report, one-third of the construction work on the new line from Chenkartung to Beiyuantailai, Fengtien, has been fully completed, the remaining work having been carried on steadily. Being anxious to give facilities to communications at an early date, the railway authorities have decided to open to traffic the section already finished sometime in September.

Possible Loan of Y.25,000,000 by The Chinese Eastern Railway Reported.—Mr. Hayakawa, president of the S.M.R. Company, is inclined to loan twenty-five million yen to the Chinese Eastern Railway Co.

Coal Mining Co. Building Light Railway.—Chang Shun Coal Mining Co., Shanghai, established in 1913 with a capital of $2,200,000, has its mineral property at Sze-mow-tung in Huh-cheeshang of Chang-shun-hsien, Chekiang. The mine covers an area of more than 40 square *li* and up to now two seams have been proved with a depth of from 4-ft. 5-in. to 5-ft. and 7-ft. 5-in. to 8-ft. respectively. As estimated by mining engineers, its output—excellent bituminous coal—will be increased year after year and the supply is not likely to be exhausted within one hundred years.

The company, however, has experienced much difficulty in transportation of coal to the distributing centre, the mine being located in a deserted region. As a means to overcome the difficulty, it has been decided at its last committee meeting that a light railway will be built from the mineral district to Wu-li-jao, a distance of 50 *li*. According to estimate, the construction of the railway will call for an expenditure of $500,000, and rolling stock and other equipment will cost at $300,000. Work is reported to have already started.

New Supply to Peking-Mukden Railway.—As soon as approved by the ministry of communications, the Peking-Mukden Railway Administration will place an order with Mitsui Bussan Kaisha for supply of 25,000 rail sleepers, 2,420 side-track sleepers and 7,500 bridge sleepers.

Passenger Car to be Equipped with Machine Guns.—As a protest against robbery of trains by brigands, which repeatedly occur along the Tientsin-Pukow line it is reported that the communication authorities are contemplating to put two machine guns and police on every train.

Immediate Construction of Shaoshing-Shoshan Railway Requested.—Mr. Chen Liang-shih, a native of Chekiang, has submitted a petition to the ministry of communications, requesting to carry out the construction work of Shaoshing-Shoshan Railway, Chekiang, which was planned to be built years ago and has been suspended on account of financial shortness.

Prospect of Tube Railway for Calcutta.—The *Englishman* understands that Mr. Ogilvie, who had been deputed by Mr. Dalrymole Hay for the government to make an enquiry into the possibility of having tube railways in Calcutta, has now completed his survey and left India for home. His report is to be issued shortly. It is understood that from an engineering point of view it is quite feasible to have tube railways in Calcutta. The only consideration now is a financial one, whether the initial sum of money needed in order to inaugurate the service can be raised. The project is not a municipal one, but is in the hands of government. Mr. Ogilvie's survey was for the purpose of collecting data locally regarding the soil, temperature, prices, depth of the Hughli, possible routes, connections with railways and tramways and sites for stations.

The Light Railway Along the Yalu River.—The civil governor of Fengtien has instructed the Taoyin of the eastern prefecture of Fengtien to make preparations for the construction of the proposed light railway along the Yalu River. The work is estimated at $10,000,000, one half of which is to be subscribed by the officials while the other half is to be subscribed by the citizens.

Signal Station on Peking-Suiyuan Railway.—It is reported that the Peking-Suiyuan Railway is planning to establish a signal station at Ning-yuan at an estimated cost of about $46,300.

Inauguration of Peking-Suiyuan Railway.—On September 19 there will be observed at Suiyuan the inauguration ceremony of the Peking-Suiyuan Railway which was opened to traffic last May. This railway, whose main line measures 1,213 *li* with a branch line of 122 *li* was constructed exclusively by Chinese and purely out of Chinese money.

Szepingchar-Taonan Railway.—About eight-tenths of the Chencharteng-Peiyingtailai section, which measures 72 miles, on the Szepingchar-Taonan Railway has been fully completed; and service from Chencharteng to Dahling will commence on November 1, 1921, while the section from Dahling to Peiyingtailai via Men-lienying and Pa-si will probably be opened to traffic at the end of the year. The building of remaining section from Peiyingtailai to Taonan measuring 140 miles on this long-projected Szepingchar-Taonan Railway will be continued next year.

Railway College Proposed by Warlord Chang.—Gen. Chang Tso-lin, inspector-general of the eastern three provinces, has decided to establish a railway college somewhere in Manchuria for educating railway experts for the service of the Chinese Eastern Railway.

Peking-Suiyuan Railway to be Extended to Ningsia.—The ministry of foreign affairs has suggested to the ministry of communications, that, owing to the absence of communications in north-west China, progress in the construction of the north-western railway should be made as soon as possible. It is reported that the ministry of communications has received his suggestion favorably, and is now considering a plan for the extension of the Peking-Suiyuan Railway from Suiyuan to Ningsia.

S.-N. Railway Building Side-Tracks at Nanking and Woosung.—In order to meet the increasing demand of transportation service by the Chang Shun Coal Mining Co., which has recently obtained a new mining concession. The Shanghai-Nanking Railway Administration has decided to build side-tracks at Nanking and Woosung and accommodate a designated lot of land for storing of coal upon rent, and also to build a wharf at Nanking and one at Woosung at an estimated cost of $65,000 and $60,00 each. When these facilities are completed, an increase of $250,000 for freightage on transport of company's coal can possibly be made every year.

1921 Railway-Building Program Progressing: Japan.—Railway construction in Japan is announced by the department of railways to be going on satisfactorily. The present financial year's program includes the laying of new lines, 260.8 miles in length, of which 104.7 miles have already been laid and are open to traffic.

The present financial year's construction program includes no trunk lines, and in the scale of importance it stands lower than the repair or improvement plan. But the mileage of the new lines to be laid is pretty large totaling 260.8 miles. According to an announcement made recently by railway authorities, the construction thus far has been up to expectations.

Very shortly two more sections will be completed, the total mileage being 23.6 miles. One of these is the Hamada-Namiko section of the Hamada Line in Fukui prefecture. This line will be completed soon. The other is the last section of the Ono Line, 14.5 miles in length. It will be opened to traffic about September 11.

The rest which are still in construction are 16 lines or sections, 132.5 miles. The department of railways plans to complete them by next March.

Big Order of Steel Rails for a British Firm.—Messrs. Baldwins, Limited, have secured an order for 17,000 tons of steel rails for China.—*Reuter.*

Replacement of Rails on S. M. R. Co. Line.—Referring to the replacement of rails and the double-tracking work on the main line of the S. M. R. Co. Manchuria Lines, Mr. J. Fujine (superintendent, the railway office) says to the following effect:—

At present the rails of the S. M. R. Co. Manchuria Lines consist of 180 miles of 100-lb., about 700 miles of 80 lb., and some 600 miles of 64-lb. It is on the cards that a section covering 180 miles shall have its rails replaced with 100 pounders. The rails ordered from abroad indirectly are arriving in succession. The price of rails is about Y.130 per ton, costing about Y.20,000 per mile in rails alone. There was, however, a time when 1 ton of rails cost Y.200.

The durability of rails varies according to the quality of rails and the locality in which the rails are laid. But in the present condition of the S.M.R. Co. Manchuria Lines, it may be safely put at 60 years. This refers to the main line, on which the heaviest traffic is carried on. The old rails are available for constructing sidings in some railway station yards.

As regards sleepers, Hokkaido timber has been in extensive use hitherto. Lately Kirin timber has come to be also used. The durability is about six years.

The Railway Company maintains a timber creosoting plant at Suchiatun south of Mukden, where the creosote obtained from the dregs left after extracting coal tar at Fushun Collieries is applied to the timber as preservative. By this means, the durability of the timber can be extended to about fifteen years.

In the present fiscal year, the work of doubling the track north of Tiehling up to Kaiyuan will be taken up.

A Railway System.—The Cantonese government has under consideration the question of linking up, by railways, the two frontier provinces included in the south-west federation, which is now a reality in name and in fact since the fall of Nanning. It is intended to construct a great trunk-line from Canton to Chungking in Szechuan and another from Canton to Yunnanfu, the capital of Yunnan. The most difficult section of the latter line has been surveyed, i.e., the section from Yunnan to Kuangsi, the rest of the line following level ground. Besides the construction of these trunk routes, there is good reason to hope that the completion of the Canton-Hankow railway will soon be taken in hand.

The construction and operation of these three trunk roads will, it is expected, transform Canton and make it one of the greatest trading centres in the world. The Canton-Chungking railway, for instance, will tap the biggest and richest province of China with an area as large as Germany and a population equal to the combined population of France and England, and resources that are truly continental in scale. And it may be noted that for the present and for many years to come, Hongkong must be the ocean port of Canton.

Order for Steel Rails.—The Peking government has ordered from the United States Steel Products Company 17,000 tons of steel rails for the Peking-Suiyuan Railway.

British Offer Loan to Help China Buy Railway Rolling Stock.—The ministry of communications has submitted a proposal to contract a short-term loan with the British-Chinese Corporation for the purchase of rolling-stock for the Hunan-Hupeh section of the Szechuen, Canton and Hankow Railway. It is understood that this suggestion has been favorably received.

Military Governor of Heilungkiang to Build a Railway.—As the opening of Ma-kar-zai-kow, north of the Sungari river, as a commercial port, will certainly enhance its industry and commerce, the tuchun of Heilungkiang intends to raise a fund of $4,000,000 from the public works department for the construction of a railway from Harbin to Heilungkiang.

Construction of Light Railway Affected by Flood.—As a result of the flood at Hu-chow, Kiangsu, the construction work of the light railway from Hai-chee to Wu-lee-jao, Huchow, has been suspended, a lot of rails and sleepers having been destroyed. The railway is being built for the Chang Shun Coal Mining Co. at an estimate cost of about $90,000.

Chinese Eastern Railway and South Manchuria Railway May be United in Transportation Service.—According to reports, negotiations are proceeding between the Chinese Eastern Railway and the South Manchuria Railway for through transportation service. The proposal is said to be mutually agreed upon by both parties and Mr. Sung Sho-lien, director of Chinese Eastern Railway, has recently made a report to the government regarding the result of the negotiations.

A Further Purchase of Cars.—There is another contract concluded between the Railway Car Loan Chinese Banking Group and the Fearon, Daniel Co. for the supply of 40 40-metric ton all steel covered wagons for the Shanghai-Hangchow-Ningpo Railway. The text reads the same as the former one for the Tientsin-Pukow Railway, only with the following alterations :—

Wagons 40 in number at the price of B.F. 32,260 per complete wagon, for goods delivered c.i.f. Woosung, excluding customs duty and all other dues.

The Railway administration's inspecting engineer is Mr. Palai.

Prolongation of Light Railway, Nantungchow.—With reference to the lengthening of the light railway owned by Dah Sung Cotton Mill, Nantungchow, work has been commenced. When completed the whole line will measure 13 *li* in length and will reach Tsing-lung-kong direct from the cotton mills.

Improvement Work on Peking-Mukden Railway.—Tht Peking-Mukden Railway brings in yearly an average net profit of over $10,000,000 which stands first among the government railways, and improvement work on it is carried out almost all the time. While the extension work from Sze-tao to Jehol is still under way, another scheme for double tracking a distance of about 30 *li* starting from Ching-chow is under contemplation.

New Work on Tientsin-Pukow Railway Approved.—The proposal of the Tientsin-Pukow Railway Administration for enlarging the No. 1, 2 and 4 railway warehouses at Pukow to be covered with strong roofs at an estimated cost of $50,000 has received approval of the ministry of communications.

The railway administration has also been permitted by the chiaotungpu to purchase 1,500 tons of pitch to coat the sleepers for preservation.

A Chinese Railway Sleeper Factory.—Most of the railway sleepers on Chinese railways are imported from abroad and an enormous amount for this has gone to foreigners' hands every year. The ministry of communications has raised a fund for the establishment of the Government Railway Sleepers Factory.

Materials for Szechuen Railway Ordered from Shanghai.—Mr. Wang, representative of the Tze-liuting-Foochen Railway, Szechuen, under projection, has lately come to Shanghai for the purchase of a lot of railway materials from the Tsin Chang Engineering Works.

PUBLIC WORKS

Public Works, Nantungchow.—The removal of Nantungchow city walls is approaching completion and the construction department is ready to build a market on the old foundations and to construct some modern roads inside the city which will necessitate pulling down some old buildings which prove to be an obstruction to carrying out the scheme.

RIVERS, HARBORS, WHARVES AND DOCKS

New Pier for Hongkong.—Tenders are being called for the construction of a reinforced concrete public pier, 160 feet 8 inches long by 41 feet 4 inches wide, and approach, at Queen's Statue Square, Hongkong.

Preparatory Offices for Haichow Harbor Works, Kiangsu.—It has been decided that pending the establishment of Haichow Harbor Works Office which will be appointed when survey of the port and other preliminary arrangements have been completed, a preparatory office will be organized at Nanking to take charge of preparatory works of the scheme.

Kiang-Ngan to be Opened as a Commercial Port.—The construction of Kiang-ngan as a commercial port near Hankow, Hupeh, has been decided to be taken up by the ministry of communications, and survey and investigation of the port is being carried on by engineers. Six hundred *mow* of land will be reserved for constructing modern roads and building a new market.

Plant for the Han-Yeh-Ping Co.—Designs of coal handling plant which has been built by Messrs. Horace Greaves & Co., Ltd., of Derby, for discharging boats at the staith on the Yangtze River, and delivering coal to the bunkers at the coke ovens, the boilers, and other parts of the works have been examined recently. The task set the designers was far from easy. The plant when fully loaded was to be capable of handling 200 tons of washed slack per hour in discharging boats from the River, has a difference in water level between the wet and dry seasons of no less than 40 feet. The plan of unloading by grab had to be discarded because the washed slack, although drained, would contain sufficient moisture to make it plastic. This would mean that the grab to be of service would have to be dropped into the material, which might well result in damaged grab or boats. The way out of the difficulty was found by a specially-designed dredger working in conjunction with a system of conveyers. The plant is a fine piece of constructional work, the mechanical portion being equally sound alike in conception and disposition.

Hsiang-Shan to Build a Wharf.—With a view to affording facilities to the steamers frequenting Hsiang-shan, Chekiang, Mr. Hus Ming-jen, with the support of the local magistrate Mr. Li Bai-tser, has formulated a plan for the building of a wharf at Bei-tung. The expenditure is estimated at something like $10,000, and solicitation of subscription among the public for the purpose has been begun.

ROADS

Chefoo-Weihsien Road.—The work on this road was started on September first of last year and will be finished shortly. Within a period of eleven months approximately 3,000 refugees have been given employment and a total mileage of 650 has been completed. The total expenditure of famine relief funds has been $850,000. The road for motor transportation purposes is to be divided in twenty sections, each section having a station, and the stations being separated into three classes. The expense of establishing the stations and purchasing the necessary equipment is estimated at $600,000.

Proposal of Anhwei-Chekiang Automobile Road.—With a view to facilitating communications and improving means of transportation, Mr. Wu Tien-ching and several others have proposed the construction of the Anhwei-Chekiang Automobile Road. In Chekiang the terminus of the line will be at Yuehong and its Anhwei terminus at Teng-chee, and the whole line, when completed, will measure about 300 *li*. A survey has been made.

An Automobile Transportation Co. in Southern Fukien.—Several Fukien officials have associated themselves with the local gentry and merchants for planning the organization of Sze Shun Automobile Transportation Co. to run a service on the newly-built provincial roads and also on roads being built and to be built. At the outset, Chong-chow will be chosen as the central station, leading to Shih-mar on the south-east, a distance of 35 *li*; to Tien-pao-hsu on the north-east and turning westward to Nan-zing-chen, 35 *li*, and to Nan-hsu on the north then turning eastward to Chang-tai-chen, 30 *li*, aggregating 100 *li* in length. Transportation service from Chong-chow to Mar-kow-jao via Feng-jen-mue, a distance of 35 *li* and from Feng-jen-mue to Chenchee, 10 *li* is also under contemplation.

Roads to be Well Paved, Tongshan.—Neglect in public work has made Tongshan, Chihli, imperfect in some degree, though on the other hand the town has made remarkable progress in industry and commerce. With a view to improving the existing conditions, Mr. Liu Tze-tseng has decided to have the Tongshan roads well paved. The plan involves the construction of a line of 1,300,000 sq. ft. to cost $10,000. Permission has been obtained from the provincial authorities and work will be carried cut in the near future.

Road Construction, Nantungchow.—Except the recently built Museum Road, all the roads in the southern part of Nantungchow are in a bad condition and very narrow. In order to facilitate communications, the road construction department has commenced to have all the narrow paths macadamized and extended in width by 10 feet so as to afford enough space for running motor-cars.

Haining-Changanchin Automobile Road, Chekiang.—The automobile road from Hai-ning to Changanchin, Chekiang, which measures 26 *li*, has been surveyed by Mr. Yue Shao-foo, the engineer. According to estimates, a profit of about $50,000 can possibly be made every year from the autobus service to be run on the road.

Road Construction, Hsuchow.—While the two roads leading direct from the railway station of the Shanghai-Nanking line to Tung-men and Nan-men respectively in Hsuchow have been completed, the construction of the second and third roads, which have been under projection for some time, will be started soon, and the local magistrate has notified the public to that effect.

Chekiang-Anhwei Automobile Road is being Surveyed.—With reference to the construction of an automobile road from Chekiang to Anhwei via Hangchow, Yue-hong, Yue-chien, Chang-hua, Shih-hsien, Tsi-chee and Shu-ning, proposed by Mr. Wu Chang-yung, a prominent merchant of Shu-ning, Anhwei, the sanction of provincial authorities has been secured, and survey of the projected line is being carried on by Mr. Chong Lu with two assistant engineers.

Woosung Military Road Planned.—In order to facilitate military transport, Yung Dao-yih, a military officer in Woosung, has decided to construct a military road from the Bay of Woosung Fort to Sze-tze-ling, a distance of about 20 *li*.

Plan of China National Roads Construction Society.—Since its establishment the China national roads construction society is endeavoring to carry out the scheme for construction of Shanghai-Nanking-Hangchow motor-road. At request of Dr. C. T. Wang, chairman of the society, General Lu Yung-hsiang, tuchun of Chekiang, has consented to send a body of soldiers to render their services in building of Shanghai-Hangchow line, and the work is expected to start before long.

TSENG KEE STEAMSHIP NAVIGATION CO., $120,000, Chefoo, Shantung, February, 1905, registered April, 1914.

YU SIN STEAM LAUNCH CO., $4,000, Shanghai, established October, 1913, registered April, 1914.

YIU AN STEAMSHIP NAVIGATION CO., LTD., $30,000, Shoushing, Chekiang, established January, 1914, registered April, 1914.

TSENG HAI STEAMSHIP NAVIGATION CO., LTD., $12,500, Tsenghai, Chekiang, established April, 1901, registered June, 1914.

JIEN TAI STEAMSHIP NAVIGATION, CO., LTD., $12,000, Foochow, established July, 1913, registered March, 1914.

HWA WEI STEAM LAUNCH CO., LTD., $12,000, Weihaiwei, Shantung, established May, 1912, registered August, 1914.

JU FOONG STEAMSHIP NAVIGATION CO., LTD., Tls. 24,000, Shanghai, established September, 1912, registered, September, 1914.

FO NING TEA MERCHANTS' STEAMSHIP NAVIGATION CO., LTD., $30,000, Foochow, established April, 1914, registered September, 1914.

TSAO SHING STEAMSHIP NAVIGATION CO., LTD., $150,000, Yingkow, Mukden, established August, 1911, registered October, 1914.

YIU TUNG STEAMSHIP NAVIGATION CO., LTD., $55,000, Haimen, Chekiang, established December, 1906, registered December, 1914.

YIN HAI STEAMSHIP NAVIGATION CO., LTD., $60,000, Shanghai, established May, 1911, registered December, 1914.

HEI LI TSENG STEAM LAUNCH CO., LTD., $50,000, Sha-tze, Hupeh, established March, 1913, registered, December 1914.

LI YUNG STEAMSHIP NAVIGATION CO., LTD., $20,000, Jin-hsien, Chekiang, established May, 1910, registered June, 1915.

HUNG CHI STEAM LAUNCH CO., LTD., $5,000, Yuan-hwa-cheng, Chekiang, established April, 1914, registered June, 1915.

SHING LUNG STEAM LAUNCH CO., $4,400, Kiukiang, Kiangsi, established May, 1914, registered June, 1915.

HSIANG KIANG STEAMSHIP NAVIGATION CO., LTD., Tls. 15,000, Hsiang-yin-hsien, Hunan, established November, 1914, registered June, 1915.

DOONG KEE STEAMSHIP NAVIGATION CO., LTD., $60,000, Shanghai, established February, 1906, registered July, 1915.

LI CHIH STEAMSHIP NAVIGATION CO., LTD., $20,000, Jin-hsien, Chekiang, established, 1905, registered August, 1915.

HANG CHU STEAM LAUNCH CO., $30,000, Chu-chi-hsien, Chekiang, established May, 1915, registered September, 1915.

TSENG SHING STEAMSHIP NAVIGATION CO., LTD., $60,000, Kiangkan, Chekiang, established September, 1915, registered February, 1916.

CHUNG HWA STEAMSHIP NAVIGATION CO., Ltd., $1,000,000, Changsha, Hunan, established July, 1912, registered March, 1916.

SAN PEI STEAMSHIP NAVIGATION CO., LTD., $200,000, Shanghai, established June, 1914, registered April, 1916.

CHINESE MERCHANTS' STEAMSHIP NAVIGATION CO., LTD., of Tungchow, Chungming and Haimen, $60,000, Shanghai, established March, 1916, registered April, 1916.

HONG KEE STEAMSHIP NAVIGATION CO., LTD., $40,000, Sha-tze-tseng, Hupeh, established June, 1913, registered May, 1916.

CHEN CHONG STEAMSHIP NAVIGATION CO., LTD., Tls. 300,000, Shanghai, established March, 1916, registered May, 1916.

TUNG CHI STEAMSHIP NAVIGATION CO LTD., $20,000, Jui-an, Chekiang, established September, 1914, registered October, 1916

CANTON STEAMSHIP NAVIGATION CO., LTD., $1,000,000, Canton, established June, 1913, registered March, 1917.

CHIAO TUNG STEAMSHIP NAVIGATION CO., LTD., $200,000, Chefoo, Shantung, established May, 1916, registered May, 1917.

YU FOONG STEAMSHIP NAVIGATION CO., LTD., Tls. 170,000, Ichang, Hupeh, established February, 1917, registered May, 1917.

CHUNG HWA SIN YU INLAND RIVERS STEAMSHIP NAVIGATION CO., LTD., $5,000, Wusih, Kiangsu, established February, 1912, registered June, 1917.

TSENG CHONG STEAMSHIP NAVIGATION CO., LTD., Tls. 100,000, Shanghai, established June, 1917, registered August, 1917.

YUEN SHING INLAND RIVERS STEAMSHIP NAVIGATION CO., $10,000, Lih-yang, Kiangsu, established December, 1915, registered December, 1917.

MINKIANG STEAMSHIP NAVIGATION CO., LTD., Tls. 120,000, Fanhsien, Szechuan, established November, 1917, registered January, 1918.

SAN PEH STEAMSHIP NAVIGATION CO., LTD., $1,000,000, Shanghai, established March, 1918, registered March, 1918.

YUEN TUNG STEAMSHIP NAVIGATION CO., LTD., $80,000, local currency, Foochow, established September, 1917, registered April, 1918.

LI CHENG INLAND RIVERS STEAMSHIP NAVIGATION CO., LTD., $9,000, Kiang-yin, Kiangsu, established February, 1918, registered October, 1918.

YUNG CHI STEAM LAUNCH CO., $10,000, Shoushing, Chekiang, established October, 1918, registered October, 1918.

TA TUNG STEAM LAUNCH CO., $10,000, Shoushing, Chekiang, established October, 1918, registered October, 1918.

NING SHOU STEAMSHIP NAVIGATION CO., LTD., $1,500,000, Shanghai, established June, 1909, registered November, 1918.

CHIAO TUNG STEAMSHIP CO., Y.200,000, Chefoo, Shantung, established July, 1918, registered December, 1918.

NING SHING STEAMSHIP NAVIGATION CO., LTD., $200,000, Shanghai, established November, 1917, registered 1919.

DOONG YIH STEAMSHIP NAVIGATION CO., LTD., Tls. 100,000, Shanghai, established September, 1918, registered February, 1919.

WU TUNG STEAMSHIP NAVIGATION CO., LTD., $2,000,000, Harbin, established March, 1919, registered June, 1919.

HUNG AN STEAMSHIP NAVIGATION CO., LTD., $450,000, Shanghai, established December, 1918, registered July, 1919.

HUANG AN STEAMSHIP NAVIGATION CO., LTD., $1,000,000, Shanghai, established December, 1918, registered August, 1919.

CHUNG HWA SIN YU INLAND RIVERS STEAM LAUNCH NAVIGATION CO., LTD., $10,000, Wusih, Kiangsu, established February, 1912, registered October, 1919.

Railway Transportation Companies

SHAOCHOW-SWATAO RAILWAY TRANSPORTATION CO., LTD., freight and passenger transportation service, $2,500,000, Swatao, Kwangtung, established May, 1908, registered August, 1905.

SHONGCHENG LIGHT RAILWAY CO., LTD., $109,200, Shongcheng, Kirin, established February, 1913, registered October, 1916.

Automobile Transportation Companies

YEN FO CHIEN AUTOMOBILE TRANSPORTATION CO., LTD., $100,000, Foochow, established September, 1917, registered January, 1918.

KALGAN-URGA AUTOMOBILE TRANSPORTATION CO., LTD., $100,000, Kalgan, established February, 1918, registered October, 1918.

KALGAN-URGA AUTOMOBILE TRANSPORTATION CO., LTD., $100,000, Kalgan, April, 1918, registered February, 1919.

Metal Works

YUEN CHONG METAL WORKS, metal casting, $100,000, Shanghai, established February, 1883, registered January, 1908.

YU YUNG METAL WORKS, manufacturing different kinds of metal implements, Tls. 20,000, Yung-hwa-tseng, Szechuan, established November, 1910, registered December, 1910.

SUN DA IRON WORKS, LTD., manufacturing machinery, iron tools, $12,000, Sin-Jih-tseng, Chili, established May, 1911, registered June, 1912.

TUNG SIN MACHINERY CO., manufacturing ginning machines, $30,000, Shanghai, established March, 1902, registered April, 1914.

LI YUNG METAL WORKS, LTD., manufacturing brass and iron wares, $10,000, Kirin, established June, 1912. registered May 1914.

TSENG DA KETTLE MANUFACTORY, LTD., casting kettles, $50,000, Wusih, Kiangsu, established September, 1914, registered July, 1914.

Electric Grab Transporters for Han-Yeh-Ping

Grabbing Ore from Steamers Cheaper then Chinese Coolie Labor

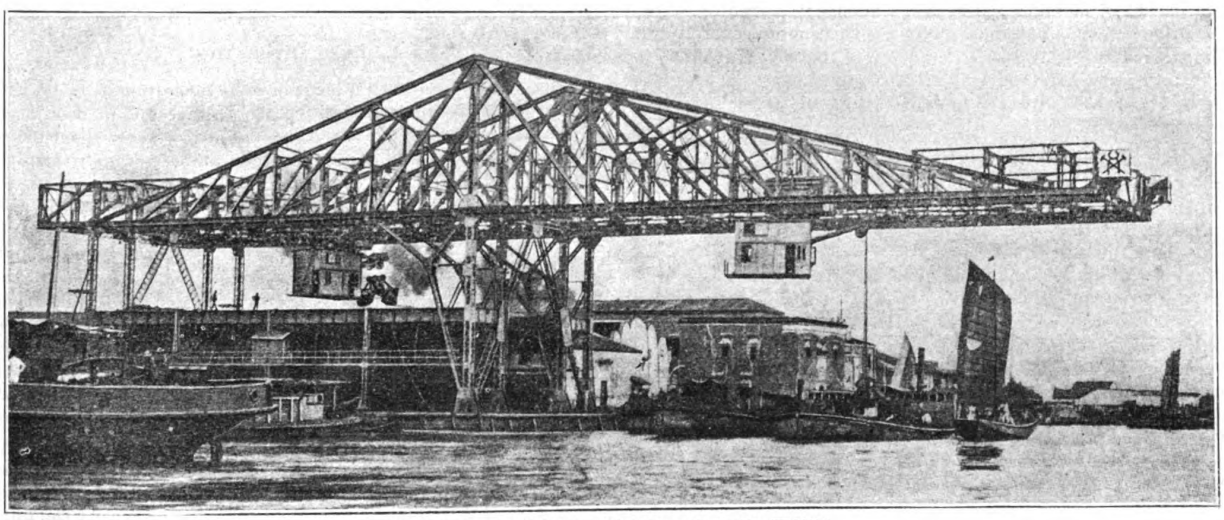
By H. J. Smith, M.I. Mech. E.

(Member of the Engineering Society of China)

FOR many years it has been an accepted fact that coolie labor in the East is far more economical for handling bulk commodities than modern mechanical devices, and as a result, the market for transporters, conveyors, ditchers, hoists and similar labor-saving machinery has not developed in keeping with the expanding demand for other engineering plants. It is a matter for congratulation to see this phase of engineering tackled in a forceful manner by experts with results which not only proves the old idea a fallacy, but that a real and profitable market exists in the Far East for such labor-saving machinery, if special attention and study is given to the subject. It is another testimonial to British enterprise that a British engineer has been the first in opening up the possibilities in this line in China. Mr. H. J. Smith, the head of the mining department of the General Electric Company of China, Ltd., and special representative of the Fraser & Chalmers Engineering Works, Ltd., recently contributed a paper to the Institution of Mechanical Engineers on "The Mechanical Loading of Ships," in which he dealt with four plants erected in cheap labor countries whose operation proved that bulk commodities such as coal and ore can be transported, loaded into steamers and unloaded at less cost than was possible previously by using native manual labor. One of the plants described in the above paper was the electric grab transporters installed at the Han Yeh Ping Steal Works by the Frazer & Chalmers Engineering Works under the direction of Mr. Smith. (*Editor, F.E.R.*)

The Han-Yeh-ping Iron and Coal Corporation is the largest industrial undertaking in China, having a capital of over 60 million dollars, and finding direct employment for about 23,000 persons. The shareholders and management are entirely Chinese, although the Japanese have lent financial assistance on terms exceedingly advantageous to themselves. The writer joined the staff temporarily whilst installing the transporters described below.

The properties owned by the Company are situated along the valley of the Yangtze Kiang, and they contain all the raw products necessary for the production of iron and steel. The iron and manganese mines—and also the limestone and dolomite quarries—are situated in the Tayeh district of the province of Hupeh; the principal deposits of iron being in the Lion, Shark and Elephant Hills, all adjacent and connected to the river bank at Sz-hui-yai by 19 miles of standard gauge railway, also the property of the Company. These iron mines are worked on the open cast system, the total ore in the three deposits being estimated at seven hundred million tons. The writer thinks it possible that the three bodies mentioned may be huge outcrops of an enormous deposit at greater depth.

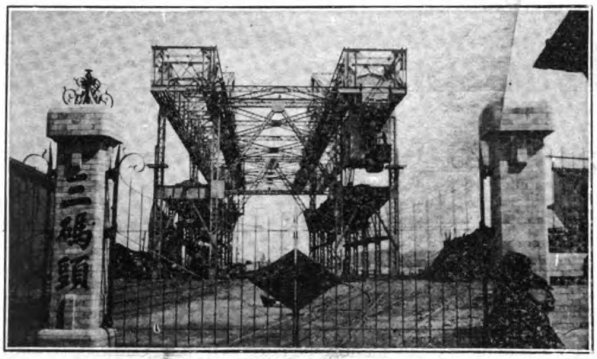


THE HAN-YEH-PING TRANSPORTER AT WORK

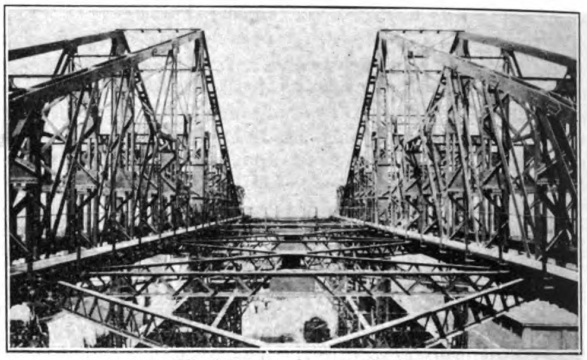
This plant was erected by Chinese labor, under the Sole Control of the Fraser and Chalmers Engineer, Mr. H. J. Smith, the only white man on the job.

Coal Mines and Coke Making Plant

The coal mines and coke-making plant are at Pinghsiang in the province of Kiang-si. The seventy miles of railway from the collieries to Chu-chow on the Siang-Kiang—a tributary of the Yangtze—where the wharves are situated for shipping coal and coke to the ironworks, was also built by the Han-Yeh-Ping Company. Part of the line has since been sold to the government, and now forms a section of the future Hankow and Canton Railway, the completion of which will bring Hongkong within nineteen days post of London.



View from the Rear after Erection



Wind Bracing between Bridges

The original estimate of 500,000,000 tons of coal in the Pinghsiang district may be modified by later figures; but the present output of 600,000 tons per annum could easily be increased by the introduction of more modern machinery and local management. The blast furnaces, the steel-making plant and the rolling mills are situated at Hanyang on the confluence of the Yangtze and Han rivers, which place, speaking approximately, is about midway between the deposits of coal and iron. These iron and steel works are under the superintendence of Mr. Z. T. K. Woo, doctor of science and master of metallurgy, Sheffield University, a man of marked executive ability. He is ably assisted by his engineer, Mr. Kwauk, also trained at Sheffield and a graduate of the same University.

Steel Works Equipment

The works possess a fairly modern plant, consisting of four blast furnaces, seven Siemens-Martin steel furnaces, and a rolling mill which turns out plates suitable for shipbuilding and sections of all sorts up to 12-in. Rails are also rolled in fairly large quantities for the various railways in China. The older portion of the works is equipped with two blast furnaces each capable of producing 100 tons of pig iron per day. The newer extension has two 250-ton units, with turbo-blowers, turbo-alternators, and other details equally up to date. The steel is made practically from the raw material, as the only scrap available is the shearings from the output of the rolling mills.

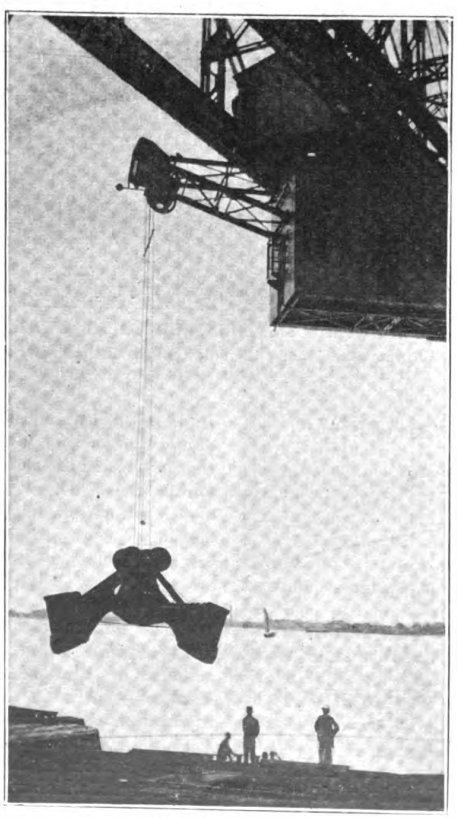
The Ton-Tsu-pao Iron Works

The new ironworks now being built at Ton-tsu-pao, on the Yangtze close to the iron mines, are planned on a most ambitious scale. No less than eight 450-ton blast furnace units are projected, the first two of which are now being erected. The furnaces are of American manufacture, but the turbo-blowers for the furnaces and the turbo-generators for power purposes are being supplied and erected by the Fraser & Chalmers Engineering Works of London. The boiler installation is also of British manufacture (Babcock & Willcox). The mechanical appliances for unloading and loading the raw materials and finished products are being built in England.

All the ore, limestone, coal and coke for the Hanyang Works is carried from the Pinghsiang and Tayeh Wharves by the company's own tow boats and lighters, the total numbering 21 steam tugs and 180 lighters. The present output of iron and steel requires the unloading at the Hanyang Wharves of about 3,000 tons of raw material per day. Until recently this work was done by Chinese coolies, but the great rise and fall of the Yangtze river*—over 45-ft —was the cause of considerable trouble to these manual operations, especially in wet and wintry weather, and it was considered advisable by the Chinese management, in spite of the abundance of cheap labor, that it would be more economical to do this work by mechanical means.

Yangtze Difficu'ties

The decision entailed a plant of so ne magnitude to cope with the exceptional circumstances. When the river is in flood there is 25-ft. of water alongside the wharf, but at low-water about 100-ft. of foreshore is disclosed, and lighters can tie up no nearer than 130-ft. from the wall. This necessitated the building of cantilevers of considerable size and strength, capable of bearing large grabs at work 150-ft. from the face of the wall. The moving load is nearly 100 tons, and the stresses due to the operation of the grabs is severe, especially when the machinery happens to pick up the two 11-ton grabs simultaneously at full speed, whilst working at the extreme end of the cantilevers.



Grab in Operation

The cantilevers and anchor arms, together with the columns and bunkers have a weight of 530 tons. The total weight of the plant, including the grabs and machinery, is 680 tons. The four main bridge girders are 281-ft. in length, and 37-ft. in depth at the centre, each girder weighing approximately 100 tons. The bottom chord of the cantilever arms are 100-ft. above low-water mark.

When the grabs are working on the extreme end of the cantilevers there is an upward pull of 120 tons on the rear columns supporting the anchor arms, this being equal to 30 tons per column. The over-turning moment is safely counteracted by a continuous block of reinforced concrete, weighing 500 tons, which is laid under the four columns to act as foundation or loading as required. The six holding-down bolts to each

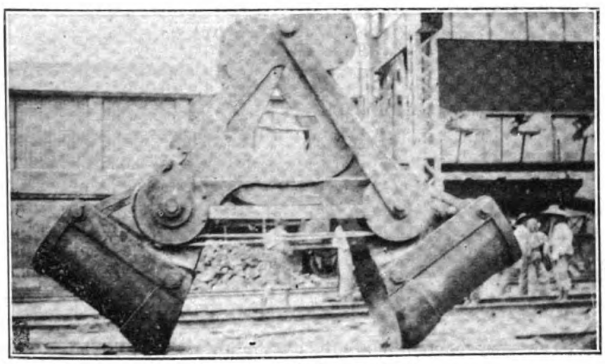
* The rise and fall of the river is not tidal, but is caused by the melting of the snow in the Himalaya mountains.

column base are carried down and anchored to a grillage which embraces the loading in such a manner that no fracturing of the concrete could endanger the safety of the plant. Actually there is rarely any overturning effect, because the nest of bunkers, which are firmly fixed to the main and rear columns under each transporter, are seldom all emptied of ore at the same time. The total capacity of these bunkers is 1,000 tons of iron ore. They serve to prevent any stoppage of the grabbing operations due to the shunting of wagons, but need not be used necessarily as the grabs can discharge their load direct to the 30-ton bottom dump steel wagons when the latter are available.

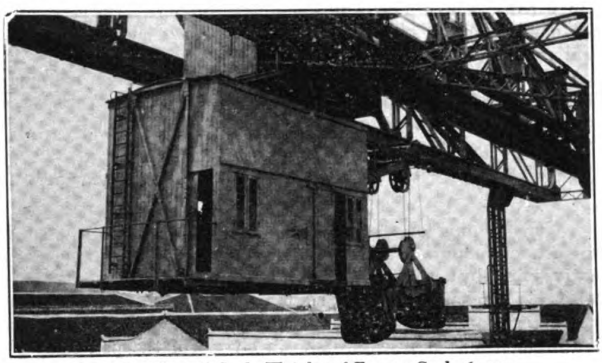
The maximum load on the four main columns is approximately 800 tons, or 200 tons per column. This weight is supported by a substantial concrete and stone-faced wall founded on the mud banks of the Yangtze. Considerable piling and grillage work was, of course, necessary to ensure stability, and the bank was afterwards well pitched with an apron of slag to prevent erosion. The writer made a careful examination of the work after the annual flood had subsided, and, so far as could be seen, the precautions taken were all that was necessary. The levels of the column bases were also checked without finding any settlement, unequal or otherwise.

Details of the Unloader

The unloader consists essentially of two transporters, 50-ft. between centres apart, braced together to act as one unit of great stability against wind pressure. Each transporter is fitted with a traveling carriage from which is suspended a crane capable of revolving 360 deg., whilst operating a grab weighing 7 tons when empty and 11 tons when full. The total weight of each grab and its attendant machinery is nearly 43 tons, so that the total moving load on the twin transporters, when the grabs are full, is almost 100 tons. The jibs which carry the rope sheaves for the grab ropes form part of the crane structure. Each grab is operated by four ropes, i.e., two closing and two dumping ropes, each pair being capable of acting as sustaining ropes. The under-hung portion with its grab and load is suspended from the centre of the traveling carriage by a large ball-bearing mounted on trunnions designed to ensure the weight being equally distributed on the four wheels of the traveler under all conditions of grabbing. As each grab is capable of traveling and turning a complete circle, the two working in co-operation can drop into any part of a ship's hatchway 90-ft. in length without moving the vessel. Or, when working separately, they can grab from two holds on smaller craft.



Traveling Cabin and Grab



Rear View of Grab, Weight of Empty Grab, 6 tons

The Electrical Equipment

The hoisting, traveling and slowing machinery is driven by separate electric motors, each set being controlled by one man, who travels in the machinery cabin with the grab, so that he has always a complete view of the operations.

The total power called for by the motors on the transporter is equal to 500 B.H.P. This is drawn from a turbo-alternator working close to the blast furnaces, where the boilers generate steam by burning the waste gases from the furnaces, and a small coal fire for auxiliary and ignition purposes. The high tension current from the alternator is converted by a rotary converter, fixed near the transporter, to 440 volts direct current, and is transmitted to the collectors on the traveling carriages by copper mains suspended the full length of the bridges by ears fixed to the underside of the cross-bracing.

The 170 B.H.P. hoisting motors are of the series-wound interpolar semi-enclosed type running at 600 revs. per min , which gives a rope speed on the drums of 190-ft. per minute. The automatic circuit-breakers were set to 318 amperes, and in all cases where they came into action on peak loads, the grabs were held instantly by the powerful solenoid brakes provided for the purpose. Even when the maximum load ran full-speed into the hoisting limit switches the result was the same, the motor being disengaged from the gearing just a fraction of a second before the brakes gripped. The traveling motors are of similar type 65 B.H.P. (115 amperes), and are geared to move the traveling carriage at a maximum speed of 740-ft per minute.

The 15 B.H.P. slowing motors can turn the grab through 360 deg. in 36 seconds, this being equal to a speed of 200-ft. per minute when measured at the maximum radius. The electrical control and brake gear supplied with the slowing motors was altogether too fierce in its action of starting up and shutting down for the work which had to be done by the mechanical portion and it was necessary to rearrange this on the site until the results became satisfactorv.

Details of the Switchgear

The switchboards are placed in the lower cabin close to the controls so that the driver has command of all the instruments without moving from the footplate. Besides the usual power and lighting switches, hand-guard fuses and meter dials, the panels are fitted with automatic overload and limiting circuit-breakers, which bring all operations to a standstill without damage to the plant in the event of sudden incapacity befalling the driver. The difficulty of connecting the main leads from the trolley wire collectors on the traveling carriage to the rotating switchboard in the machinery cabin underneath was overcome by fitting revolving contactors over the centre of the ball-bearing races, and passing the internal wires down the hollow centre designed for that purpose.

The whole of the erection work and foundations was carried out by Chinese labor, the writer being the only European on the site.

Difficulties of Erection

The erection of the structure presented several unforeseen difficulties, because the material was shipped from England at the time when the minister of munitions prohibited the export of steel. The contractors (The Fraser & Chalmers Engineering Works) made every effort to complete the plant, but a number

of the smaller details and all the tools for erection had to be short-shipped. Making the tackle in China entailed a lot of work, the biggest job being the construction of two traveling derricks with 50-ft. jibs, capable of handling 5 tons each, so that the corbelling of the two cantilevers could proceed simultaneously. A lattice steel mast, capable of lifting 5 tons to a height of 65-ft., together with all the purchase tackle necessary and three double-geared hand winches, were also made on the site. These tools were built whilst work on the foundations was in progress, and the tackle required first was completed in good time to commence work on the superstructure.

After the columns and bunkers had been erected the timber falsework was built up from the latter to carry the bottom booms of the anchor arms. No special timber could be purchased for the falsework on account of the war shortage, but fortunately the sleepers required for the trackwork round the plant and lines leading to the furnaces arrived, and were utilized for the purpose with good and economical results. The work of driving 75,000 ⅞-in. steel rivets on the site by Chinese labor was completed without difficulty, although a larger percentage failed to pass inspection, and had to be cut out, than is usual at home. But the final work was creditably done.

Deflection Tests

Finally, the bridge work was put through exhaustive tests for deflection, etc. The test load was moved along the bridge and readings taken at each vertical until the load reached the extreme end of the cantilever, where it was allowed to remain 40 hours before the final readings were taken at the verticals as the load was returned to the end of the anchor arm. By this means each panel and the nose of the cantilever showed 24 readings under varying conditions, with a like number at the centre of the anchor arms.

The building of the plant was completed without accident to men or material. This immunity was accounted for, in the native mind, by a liberal sprinkling of the water under the cantilever with rice purchased by general subscription of the gang to appease the water gods. This unusual method of insurance on one occasion led to fighting, because the man in charge of the pontoon—who was deputed to do the sprinkling—was too liberal with the rice around his own craft. The plant went to work without a hitch after the Chinese chosen as drivers had learned how to manipulate the controls, which they did rapidly.

Owing to the grabs having to be hoisted 75-ft. at each lift when the river is low, and then travel from the end of the cantilevers to the bunkers and back, a total movement of 650-ft. for each grabbing without reckoning the slowing movements and the smallness of the craft necessary to suit the river conditions, the rate of unloading is not so rapid as would otherwise be the case. The machinery is designed to unload 100 tons of iron ore per hour with each grab when working on ocean-going steamers, or craft of equal capacity; but the best results obtained by the Chinese drivers when unloading the small lighters was 700 tons with one grab in a working day of 10 hours.

When the writer left China the plant had unloaded 270,000 tons of ore, coke, coal and limestone without an accident of any kind, and travelers from England to Central China were somewhat astonished to find unloading appliances there equal to anything that could be matched against them by any similar undertaking in Great Britain.

In conclusion, the writer would like to make a point of the fact that an important undertaking under Chinese management and in China, where labor is plentiful and cheap, have found it worth while, after a lengthy trial of manual labor, to replace the coolie by a mechanical contrivance for unloading material in bulk.

The Chemical Industry in Japan

Dr Takamatsu, director of the Tokyo Industrial Laboratory, in a official bulletin, says that it is necessary to establish a large government laboratory where the necessary experts can be trained if Japan is to hold her own in developing her chemical industry. Before the war, writes Dr. Takamatsu, Japan had to import most of her dyes and chemicals, especially from Germany. During the war the law for the encouragement of the dyeing and chemical industries was passed, and in 1916 the Japan Dye-Stuff Manufacturing Company was established. Lack of funds and expert workers has hampered the activities of the company. Last year the imports of dyestuffs were very large, and they are, judging from prevailing conditions, likely to be much larger this year. During the war numbers of dyestuff works were started in various parts of Japan, but nearly all have disappeared since the depression set in. Those that still hold on are working on a very small scale, and have no permanent plans of business. The chemical industry, which is of so much importance to Japan, cannot be developed on such narrow lines, and the assistance of the government in the drection already indicated is urgently necessary. The Japan Dye-Stuff Co., it is reported, is contemplating the engagement of dye experts from Germany. Such a plan may also be adopted by other chemical works in the country, which feel the necessity of a thorough reform of the industry.

Horton Steel Works

The Canadian Chicago Bridge & Iron Company, Ltd. of Bridgeburg, Ontario, announce a change of corporate name to HORTON STEEL WORKS, Limited in honor of the late Horace E. Horton who founded the organization in 1865. Their main offices and works are at Bridgeburg, Ontario, where C. H. Scheman is general manager and Mr. C. C. Gregory is the manager of the plant. Their eastern sales office is at 260 Saint James Street, Montreal, Quebec, where Mr. G. S. Sangdahl is the district sales manager.

The Third Netherland Indian Commercial Fair

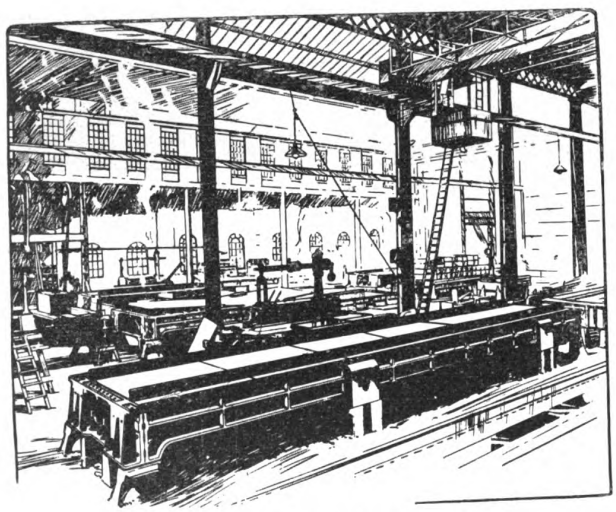
The very energetic administration of the Netherlands East Indies by the Dutch is well exemplified in the commercial fairs they have had in the past and in the one for which extensive preparations are in progress, to be held at Bandoeng (Java) in the second half of 1922. It is stated that the fair will have an entirely international character and it is intended not to make any restriction as regards the kind or the origin of products and commodities to be exposed. The government of the Netherlands East Indies have intimated that the fair being planned will be of greater proportions than its predecessors and that it will undoubtedly also surpass them in commercial importance. It will no doubt afford an excellent opportunity for all intending exposers of Far Eastern products.

Jeffrey Material Handling Machinery

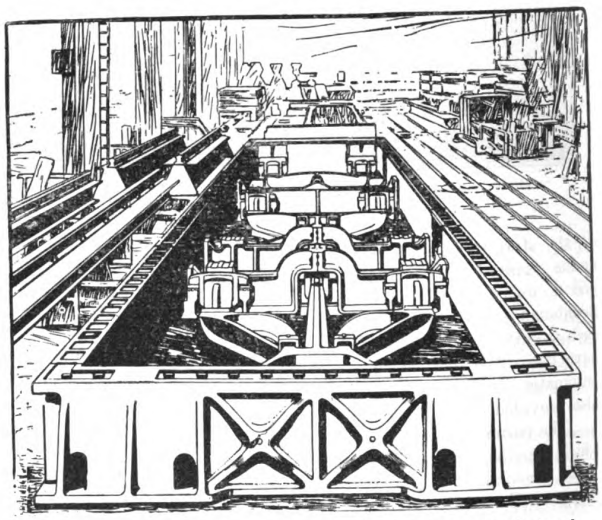
The Jeffrey Manufacturing Company of Columbus, O., have just issued a new Price Catalog, No. 350, a handsome, well-bound book of over 200 pages, covering the many varieties of machines for the handling of heavy materials for many purposes and largely utilized in the cane sugar industry. The book contains illustrations, price lists and dimensions of Jeffrey chains, sprockets, conveyor and elevator details, transmission and gears. Illustrations and descriptions of their standard line of elevating and conveying machinery for every industry, complete coal handling equipments for boiler houses and tipples, mining machinery, such as coal cutters, crushers, pulverizers, shredders, portable loaders, etc. Those interested in such work can secure copies of the same by addressing the Jefferson Manufacturing Co., Columbus, Ohio.

Weighbridges for Use on Chinese Railway Systems

GREAT strides are being made by the engineers who are responsible for the maintenance and efficiency of the important railway systems of China, and they appear to be making every effort to bring the systems quite up-to-date by the introduction of the most modern plant and appliances. At the same time great care and discrimination are employed with the object of introducing only those machines and appliances, which, by actual test, and owing to the reputation of the manufacturers responsible for their production, are certain to be efficient, and to give good results in service. The policy of the engineers is no doubt to eliminate, as far as that can be done, the risk of failure of any part of their plant or machinery. In order to carry out that policy the engineers must have confidence in the efficiency, not only of those engineering products which are perfected under their own supervision, and which are manufactured in accordance with their own designs, but also of the machinery of a special nature which is manufactured for them to designs put forward by the makers, and "backed" by the reputation of those makers, and the experience and knowledge of their own engineers who are specialists in the particular class of machine which they manufacture.



Combination Weighbridge Designed for a Chinese Railway being erected



View showing Details of the Levers, Knife Edges, etc., Designed for use on a Chinese Railway

A very good example which bears out this supposition of ours is to be found in the large railway weighbridge of to-day. Messrs. Henry Pooley & Son, Ltd., of Birmingham, England, have a world-wide name as the manufacturers of weighbridges which embody every possible improvement, and which can be regarded always as the product of highly skilled and experienced weighing machine engineers for the use of equally skilled and experienced railway engineers.

The machines produced by that well-known house can be relied upon always to give satisfaction whatever the conditions of service, as they are in every case designed to efficiently meet the special and varying conditions of the different countries, climates, etc., with which engineers must always contend. They have had a unique experience of railway conditions during the eighty-five odd years during which they have manufactured weighing machines for all the chief railway companies of Great Britain and many overseas countries; and their engineers have not failed to take full advantage of the vast experience gained during that time. These facts, and also the striking fact that nine-tenths of the railway traffic of Great Britain and Ireland is weighed on Pooley weighing machines no doubt influenced the engineers of a number of the railway companies in China, with the result that Messrs. Henry Pooley & Son, Ltd. are now shipping out a number of weighbridges of a special design for use on their systems. The machines are all of the same design and consist of two weighing units, the length of which is so calculated that every wagon of a freight train composed of mixed wagons varying from the small fixed frame wagon of 12 tons capacity, with a wheelbase of 9 feet, to a large 40-ton bogie wagon with a wheelbase of 35 feet, can be weighed as it passes over the weighbridge, without the necessity of uncoupling. An enormous saving of time is thereby effected. The machines are designed to withstand the passage of a locomotive imposing a load of 60 tons on a wheelbase of 12 feet, and as all the parts are of ample strength to withstand that rolling load, no relieving apparatus of any description is required.

The indicating steelyard is graduated up to the metric equivalent of 70 tons, and in this connection it will be noted with interest that the Chinese railway companies are now using the metric system of weight only—the machines being arranged to indicate by divisions of 5 kilos, up to 70,000 kilog.

The two photographs which accompany this short article represent one of the machines during construction at Messrs. Pooley's Works at Kidsgrove, in North Staffs, England, and the arrangement of the weighing levers, the ample strength of the parts, and length of the knife-edge centres, can be clearly seen.

portion would provide China with means of sending one or two hundred students here every year."

There is little doubt that in the long run British trade and prestige in China would receive a great stimulus as a result of the remission of the British share of the Boxer indemnity, but with the present feeling in Canton, such an act of friendship would be construed as a covert attempt to bolster up Peking at the expense of the South. The viewpoint of Japan would seem to cover the situation from all angles. The greatest benefits to China as a whole from the remission of the indemnity, can come only through a united country, the establishment of a stable government having the support and confidence of the entire people.

* * *

Engineers All

"We, the Presidents of the four American National Societies of Civil, Mining, Mechanical and Electrical Engineers, on behalf of our Councils, send you our good wishes. We have instructed our representatives attending the Conference in London on June 29, 1921, to express our feeling of brotherhood and our deep sense of loss in the death of so many of our British colleagues on the battlefield. The soil beneath which they lie will always be sacred in the eyes of American engineers. We record here our sense of obligation to the naval engineers and constructors whose work enabled the British Navy to keep the sea as the first line of defence. We of America rejoice that we were permitted to share with the engineers of Belgium, France and Italy and with the men of our own blood the final victory over a war spirit dangerous alike to the rights and happiness of men. We glory in the memory of having stood by your side in battle, a guarantee to people of the British Dominions that the American Union will be always ready to give themselves in a like cause. With our greetings we pray that the engineers of all nations may dedicate themselves anew to justice and peace and to the service of humanity in a better and nobler fashion. We beg of you to accept this expression of esteem and goodwill as the voice of your colleagues and brothers of America."

IN the above glorious words the four great American engineering societies paid tribute to the engineers of Great Britain, France, Belgium and Italy on the occasion of the last conference of the Institution of Civil Engineers. It breathes the true spirit, the sentiment of broad-minded, big-hearted men upon whose shoulders fell the brunt of keeping the war going to its victorious conclusion, words of heartfelt appreciation of the immense sacrifices on the part of British engineers that made victory possible.

It is in this spirit that THE FAR EASTERN REVIEW has taken up its post-bellum work in China, where, more than in any other place in the world, the British and French engineers have suffered for their contribution to the cause of civilization. For six long years they were deprived of a market created largely through their initiative and investments. American manufacturers of engineering products were the beneficiaries of this sacrifice.

It is natural that American firms should desire to hold their war-won position, but we maintain that no undue advantage should be taken at this time to hamper the efforts of the British and French engineers to re-establish markets created through their pre-war activities. The entire world owes a deep debt of gratitude to British engineers, who, having fulfilled their duty, re-enter the the competition in China, asking nothing more than a "free field and no favor," on one hand, and on the other, a modest request that China complies with past committments in giving their products a preference in such few instances where their capital and enterprise have created the demand.

THE FAR EASTERN REVIEW echoes the message of American engineers to their colleagues in Great Britain, and looks forward to the time, not far distant, when this sentiment will rule in China.

* * *

The Kiangsi Railway

AS the time draws near for repayment of the $7,500,000 advanced by the East Asia Company to the Kiangsi Railway Company (a provincial concern operating the line from Kiukiang to Nanchang), considerable alarm is being manifested in Chinese circles because of the company's inability to meet its obligations. These fall due in May 1922, and according to the loan provisions, if the interest and principal are not paid on that date, the Japanese company is at liberty to take over the administration and operation of the line. Recently, Mr. Tsai Ju-kai, former civil governor of Kiangsi, was elected managing director of the railway. He then proceeded to Peking to enlist the support of the government in repaying the debt. The railway ministry was willing enough to take over the responsibility, but in view of the empty condition of the treasury and the demands upon the railways for funds to run the government, as well as the prospect of meeting the amortization payments due next year on other railway loans, this plan had to be abandoned. If no other solution offers, the Kiangsi Railway Company, it is now reported, will negotiate another loan from the Japanese for the extension of the line to Kwangtung and Foochow, because its present length is too short to make further operation profitable.

Here we have another complication, that on the surface, was meant to be dealt with by the Consortium, but as the East Asia Development Company is not included in the Japanese Group of banks, and consequently not a party to the Consortium, it will be at perfect liberty to proceed with such a transaction.

On the same principle that other lines have been excluded from the scope of the consortium, as coming under the heading of those on which substantial progress has been made, the Kiangsi Railway Company, a provincial and private Chinese corporation, is also at perfect liberty to negotiate with the Japanese for the financing of the extension of the line originally included in their provincial charter. The complication involved in this goes further, as the contract for financing and construction of the lines from Nanchang south to Canton and Swatow, was promised by Peking to the British firm of Pearson & Sons. Any attempt on the part of the Chinese to raise a new loan to repay the old one to the Japanese company, and provide funds required for the proposed extensions, will be hailed by other interests as an attempt on the part of Japan to push her influence deeper into this part of China. Yet a careful analysis of the situation reveals that this seems to be about the only thing the Japanese can do in order to protect their original investment, in the same manner that others are forced to provide new loans to Peking in order to liquidate old ones. The development of the Kiangsi railway question will be interesting to follow.

* * *

International Bank Man as Japan's Adviser

WE learn that the Japanese foreign office has appointed Mr. Dallas McGrew as adviser for American affairs. Mr. McGrew is from the International Banking Corporation, and was at one time a consular officer in Japan. He is the son of a missionary, born in India and married a daughter of the late Richard Watson Gilder, for many years editor of the *Century Magazine*. Mr. McGrew is a Harvard graduate, and one of the pioneers of the movement for a better understanding between the United States and Japan.

Reinforced Concrete Railway Bridges

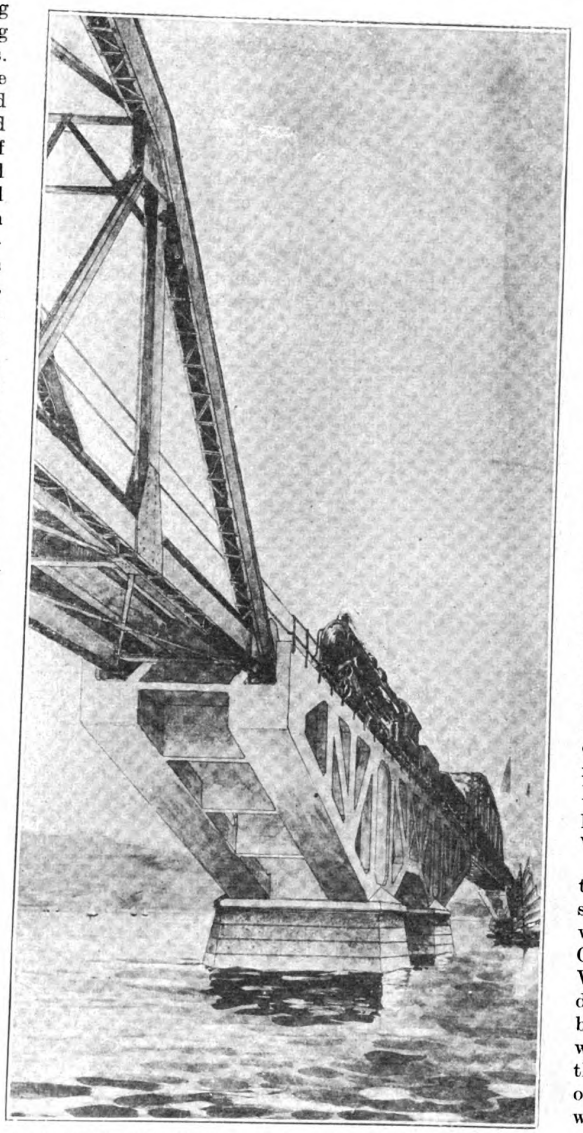
THE Yellow River bridge competition, amongst other things, has contributed greatly to a more intelligent understanding of Chinese engineering problems by advancing ideas from all schools and providing material for discussion for some time to come. Perhaps one of the most interesting phases of the competition was the entrance into the Chinese bridge-building field of the reinforced concrete engineer with his radical ideas overturning recognized standards and creating new precedents in all countries. Numerous reinforced concrete railway bridges have been erected in all other parts of the world except China. In this number of THE FAR EASTERN REVIEW will be found the illustrations and descriptions of several such structures erected by the Netherlands East-Indies States Railways at important points on their Java lines. In Indo-China are found many examples of the best work of the reinforced concrete engineer, from railway and road bridges to buildings, piers, markets, warehouses, etc. It was natural that the reinforced concrete engineer should make his presence felt in such an important competition as that of the Yellow River bridge, and it was also natural that the firm responsible for the most audacious reinforced concrete construction in Indo-China would be prominent in this competition.

We were not surprised therefore to learn that the French firm, "Etablissements Brossard Mopin," who have been so successful in Indo-China and the Straits Settlements had entered the Yellow River bridge competition submitting two designs for cantilever reinforced concrete piers supporting the steel superstructure, and, in addition, three designs with reinforced concrete superstructure for the north end of the bridge where the river is practically always dry. This, for the purpose of cutting down the construction and maintenance expense of an all steel structure.

Notwithstanding that the French engineer's estimates and calculations proved that this type of bridge was not only practical, but economical, the majority of the bridge commission ruled that such a novelty as reinforced concrete superstructure and cantilever piers cannot be applied for a railway bridge of such importance as the one over the Yellow River. The French engineers, however, hold to the contention that the adoption of reinforced concrete superstructure for the northern part of the bridge, over a river bed practically always dry, thus permitting erection without the risks attached to false-work, would materially lower the costs and at the same time realize a step forward in scientific bridge building in China. They also argued that the cost of steel work being very high, the economics of bridge building called for the adoption of solutions that would relieve China as far as possible from the high cost of imported steel and encourage the domestic Portland cement industry.

The enterprising reinforced concrete engineers had to rest content with the award of the prize of $25,000 for the third best design submitted. The Brossard-Mopin firm submitted six designs drafted in their Tientsin office after careful study of local conditions on the site of the proposed new bridge and thorough examination of the existing bridge. The general and detailed calculations and drawings were prepared by the firm's experts, and an arrangement was made with the United States Steel Products Company for furnishing the steel work for the 250-foot spans selected as most economical for designs No. 1 and No. 2 submitted by the French firm. The United States Steel Products Company furnished the calculations and drawings for the 250-foot spans, but all detailed drawings and calculations for foundations and piers and for general design of the whole bridge, including also the detailed and general calculations for steel work of Design No. 3 and for the reinforced concrete spans, were prepared solely by Mr. S. Kozierski, the bridge engineer of Etablissements Brossard-Mopin In an article on the bridge tenders published in the August number of THE FAR EASTERN REVIEW, it was mentioned that the French firm was acting for the United States Steel Products Company in the competition The above explanation will rectify this error.

In Mr. Stanislas Kozierski, the Brossard-Mopin firm have secured the services of an engineer who was assistant to Mr. M. J. Ciszewski, chief engineer of the Volga-Bougoulma Railway, and designer of the great 2,561 metre bridge at Simbirsk over the Volga, which was completed in 1916 at the height of the war, undoubtedly one of the great bridges of the world.



Design of Cantilver Reinforced Concrete Piers Supporting the steel Superstructure, Submitted in the Yellow River Bridge Competition, by the French engineering firm of Etablissements Brossard-Moppin (Bridge Engineer, Mr. Stanislas Kozierski)

Bucyrus Opens Branch in England

The Bucyrus Company, excavating and mining machinery makers, headquarters at South Milwaukee, Wisc., U.S.A., and formerly represented in the British Isles by Messrs. G. F. West & Co., wish to announce that they have now opened their own office at 19 Iddlesleigh House, Caxton Street, Westminster, and henceforth all communications for them should be so addressed.

Engineering, Financial, Industrial and Commercial News

AGRICULTURAL

Nantungchow to have a Perfect Agricultural Experiment Ground.—The five salt refinery companies in Nantungchow—Dah-yue, Dah-lai, Dah-foong, Hua-chen and Dah-yu-tsing—have jointly proposed the establishment of a perfect agricultural experiment ground in the district to work for the improvement of China's agriculture. It is reported that a fund has been advanced by some Chinese banks in Shanghai and that Prof. Kao Tan-ching and Prof. Yuan Chung-chow have been asked to take charge of the organization.

Cotton Production of Kiangsu.—The following report prepared by the Chinese Cotton Mill Owners' Association, Shanghai, is quoted from the *Shanghai Journal of Commerce* :—

Year	Kiangsu Province	Nantungchow District
1918	4,128,696 piculs	2,142,855 piculs
1919	2,763,160 ,,	1,500,000 ,,
1920	3,022,210 ,,	1,030,000 ,,

Japanese Concession, Borneo.—A Japanese company has obtained a concession of 35,000,000 acres in Borneo for the cultivation, with the help of Japanese settlers, of coffee, rubber, coconut and rice.

AUTOMOBILE

Auto Bus Service, Soochow.—Mr. Pan Loo-kao is organizing an automobile transportation company at Soochow with a capital of $200,000. A petition has been submitted to the authorities for approval and registration.

Chinese Manufacture Automobiles.—The Yangtze Machinery Works has turned out an automobile, which, when compared in quality and workmanship, is stated to be in no way inferior to foreign makes. Patent rights have been obtained from the ministry of agriculture and commerce. The company now intends to enter into competition for the China market with other manufacturers.—*Bureau of Economic Information.*

Shanghai-Taichong Auto Bus Service.—The automobile road from Shanghai to Tai-chong has been completed, though several important bridges in the central part of the line remain to be built. Great efforts, however, are being made to finish the uncompleted work within forty days, work which was delayed by the continuous rain. Automobiles ordered from abroad have already arrived at Shanghai and office buildings, car sheds, warehouses and station buildings are expected to be ready at the end of November. The service will be inaugurated within the year and at present the motor-men and conductors are busily engaged in driving for practice.

Haining-Changan Automobile Road Proposed.—Messrs. Wong Zu-foo and Tsai Tso-hsu, gentry of Hai-ning, Chekiang, have proposed to construct a motor road from Hai-ning to Chang-an via Dah-chin-chang, Yang-chiar-chong, Wu-chiar-to and King-chiar-jao measuring about 23 *li* with three stations to be established on the line. The transportation service will be inaugurated with two passenger auto-buses and two freight buses.

AVIATION

New Aeroplanes for China.—Sixty aeroplanes ordered by the Peking aeronautical bureau from Messrs. Vickers & Co. have arrived at Shanghai.

Air-Service from Peking to the Great Wall.—The Aeronautical Department has formulated a plan for air-service from Peking to the Great Wall carrying passengers. The flights will be started at 9.30 a.m. of October 27, and henceforth service will be operated on Tuesdays and Thursdays while Great Wall touring on Wednesdays. The fare is charged by time instead of by distance, Peking flight for half an hour at $15 and Great Wall travelling for 1½ hours at $30. The whole journey from the Wall to the capital takes only 1½ hourse.

BRIDGES

Railway Bridges for China.—The Chinese government has authorized the Netherland Syndicate, Ltd., for China at Amsterdam to place orders in Holland for the construction of 150 railway bridges of various dimensions. The orders will be given to the firm of De Vries Robbe & Co., at Gorinchem and to the Construction Labor Yards, Ltd., formerly de Croo & Brauns, Amsterdam. These bridges are to be constructed for the eastern part of the Lunghai railway, which is now being built under the direction of three Holland engineers.

Siamese Railway Bridge Specifications.—Tender forms, including general terms, and specifications for the supply of superstructures of 8 steel bridges for the Siamese State Railways are en route to the bureau, cables American Consul James P. Davis from Bangkok. The total length will be about 600 metres. The arrival and availability of the forms and specifications will be announced later.—*Commercial Reports.*

BUILDINGS

Railway Hotel, Tsinan.—It is reported that a railway hotel will be established at Tsinan by the Tientsin-Pukow Railway Administration.

Building Company, Mukden.—The Mukden Building Co., architects and contractors, organized by Messrs. Wang Kan-chen and Pang Ching-yao with a capital of $100,000 Mukden currency, has been established.

New Girls' School: Tokyo.—The Tokyo Jogakkan Girls' School will build on a new site at a cost of Y.300,000.

New Work in Nantungchow.—As the removal of Nantungchow city wall is nearing completion, the construction department at Nantungchow has formulated a plan for erecting new market buildings on the old city foundation and preparations for the work are being made by the department.

Hangchow to have Railway Hotel.—The Shanghai-Hangchow-Ningpo Railway administration has been authorized by the ministry of communications to build an up-to-date railway hotel at the West Lake, Hangchow, which is estimated to cost $30,000.

COMMERCIAL

Harbin Agriculture Trading Co.—Reports from Peking state that General Chang Tso-lin has purchased control of the Agriculture Trading Company of Harbin by paying $500,000, and is planning to expand the company by investing an additional $2,000,000.

Chinese Patents.—Chen Hsiang-yuan, of the Chung Hwa Domestic Industrial Co., Ltd., has petitioned the ministry of agriculture and commerce for monopoly rights of the company's invention of a process for manufacturing magnesium carbonate from wastes.

China Commercial Attaches.—The ministry of commerce and agriculture has pointed out to the cabinet that, in view of the fact that China's trade interests abroad are continually increasing and of the great field for their further development, commercial attachés should be appointed not only in the great countries but specially in those which have become treaty powers since the war.

The Ibaraki Smokeless Coal Selling Co. with a capital of Y.2,000,000, quarter paid-up, was established recently.

DEVELOPMENT

Plan of the Ministry of Agriculture and Commerce for Development of China's Fishery.—With a view to placing China's fishing industry on a proper footing, the ministry of agriculture and commerce is preparing to take the following measures :—

(1) To organize a fishing training school at Chefoo, Shantung, in addition to other two such institutions already established at Ding-hai, Chekiang, and Haichow, Kiangsu, and to send several qualified students abroad every year to pursue higher study in fishery.

(2) To establish fishing guilds in the maritime provinces for mutual advantages of fishermen and fishmongers and to draw up a set of regulations governing such organizations.

(3) T establish fishing markets at important cities along the coast, only one market being allowed within a certain designated area, and regulations for such organizations to be set up.

Sugar and Cotton Industries.—The Mitsubishi Company is said to be interested in the development of the sugar and cotton spinning industries in Manchuria as a result of a recent visit made by Boron Iwasaki.

New Companies Under Organization.—According to latest report, the following corporations are being organized :

Kiu Kee Lumber Co., Ltd., Shanghai.
Yue Chong Stock and Produce Exchange, Kiangsi.
Ningpo Flour Exchange, Chekiang.
Hankow Cotton Exchange, Hupeh.

Shantung Industrial Commissioner Fulfils His Duty.—Regarding the development of industry in the province of Shantung, Mr. Dien Pu-zan, industrial commissioner at Tsinan, has decided to take the following measures :—

(1) Encouraging people to exploit agricultural lands so as to bring them under cultivation.

(2) Operating mineral resources by subscribing a sufficient capital among the people.

(3) Taking up fishery along the coasts of the province so as to place the fishing industry on a proper footing.

(4) Encouraging forestry so as to cultivate timber on a large scale.

if properly worked, is capable of supplying all the needs of the province.

A New Mine in Kiangsu.—It is reported that an aluminium mine has been discovered at Hai-chow, Kiangsu.

A Coal Mining Co. being Organized, Shantung.—Mr. Chen Sze-chee is organizing a coal mine company at Chee-chow, Shantung, with a capital of 200,000 to operate on the coal deposit at Lung-tan, Sing-tai-hsien, which has been proved to be quite plentiful and fine in quality.

Mihshan Coal Mine, Kirin.—The civil governor of Kirin has notified the ministry of agriculture and commerce that the merchants of the province propose to open the Mih Shan coal mines, and asks for its approval.

Coal Mine, Manchuria.—Mr. Koo Van-ching has been authorized by the industrial commissioner of Kirin to operate the coal mine at Ma-ping-kew of Peng-chee, Manchuria. He is supported by Mr. Chao Tsing-shan, who has promised to invest $20,000 in the undertaking.

New Mining Company, Mukden.—A Sino-Japanese corporation known as the "North-Eastern Company" in Fengtien has been established with a capital of Y.20,000,000 for mining, afforestation and agricultural enterprises.

New Discovery of Coal Mine, Shantung.—It is reported that a new coal mine has been recently discovered at Chiang-chun-ker, Pao-shan. Its quality is well spoken of, and a certain Mr. Chang has been authorized to develop the new property by order of the ministry of agriculture and commerce.

Mines to be Developed.—By order of the ministry of agriculture and commerce, Mr. Sui Nan-ping has been permitted to operate the coal mine at Yue-shu-chuen in Yen-chang, Kirin, and Mr. Chow Kai-chen to operate the gold mine in front of Yue hill, Tung-hai-hsien.

Opening of Mineral Resources Permitted.—By order of the ministry of agriculture and commerce, the following mines are granted to operate :—

Mine	Location	Area	Mining Merchant
Coal	Shih-chai-ling & Mai-lung-kong in Nan-ling-hsien, Anhwei	570 mow	Fong Ting-ying
Coal	Tung-tao-chung in Fan-chang-hsien, Anhwei	—	Yao Shu-yue
Coal	Char-char-tsu in Dahtung, Shansi	—	Hsu Shih-yu
Coal	Pei-chuan-dee in Tsing-chen, Shansi	—	Hur Dong-foong
Coal	Soo-chong in Tsing-chen, Shansi ...	—	Van Tseng-sung

Yenki Rich In Minerials.—Yenki, in Kirin, China, possesses rich mineral resources, particularly gold and silver, say advices from Peking. The silver mine in Tienpaoshan was first operated by a Honanese, but the enterprise failed and the Japanese gained control through negotiation of a loan of $60,000. Effort was made by the Chinese to regain possession, but the Japanese demanded $3,000,000 compensation. Eventually agreement was reached whereby the undertaking was operated under Sino-Japanese auspices. The value of the daily silver output is reported by the Japanese to be $30,000.

The gold mines in the Yenki district are worked by the Chinese. Owing to the primitive methods employed and the small capital, there is plenty of opportunity for development. Recently a mining association known as the southeastern industrial association was established. It intended to begin development on a large scale.

Extension of Anshan Mining Zone.—The Chenhsing Mining Co., Anshan, under Sino-Japanese management, applied to the agriculture and commerce office, Peking, for the enlargement of the Anshan mining zone by some 93 square miles in the district adjoining Yingtao-yuan mine. A formal sanction has been recently granted.

Nickel in Yunnan.—In Yunnan nickel ores consisting of galenas, pyrites and kupfer nickel, occurring in the gneiss, slate and quartz rock of sourth-eastern Yunnan have been seen, and sent to London for assay purposes, but no workings of this metal exist in the region.

Certain galenas assayed from the Tungchwan region have been found to contain a small percentage of nickel. Associated with cobalt, the metal seems to exist in ores sent in for examination from the Red River district, to the west of Kochiu, but in none of these regions is any mining going on at the present time.

Japanese coal shipped abroad during 1920 amounted to 3,300,000 tons, including 2,300,000 tons shipped by steamers and 1,000,000 tons loaded as bunker.

Chang Shun Coal Mining Co. to Increase its Capital.—The Chang Shun Coal Mining Co., Huchow, Chekiang, has announced the increase of its capital from $2,200,000 to $3,300,000; the new capital is to be used for the extension of mining areas and purchase of additional machinery.

Operation of Mines Granted.—The ministry of agriculture and commerce has recently authorized the following mining merchants to operate the mineral resources of which they applied for development :—

Mr. Wang Jen-wen to open the coal mine at Lien-Char-shan in Ling-yue, Chihli.

Mr. Chow Chao-pei to open the coal mine at Feng-char-chong in Ping-ding, Shansi.

Iron Ore in Malaya.—An iron mine has been opened in the district of Batu Pahat, Johore, and 5,000 tons of ore are being turned out monthly. The ore is shipped to Japan; but there are signs of coal in the same district, and there are hopes that pig-iron may eventually be produced on the spot.

NEW COMPANIES

New Companies.—The following companies are being organized :—

Pei Li Coal Mining Co., Chihli.

Chen Pao Spinning and Weaving Mill, No. 3, Chihli.

Industrial Bank of Eastern China, Fengtien, by Mr. Wang Kien-jih.

Hung Shun Flour Mill, Tsinan.

New Corporations.—The following corporations have been officially registered with the ministry of agriculture and commerce :—

Pawn Trade Bank, Soochow, Kiangsu.

Yah Shun Steam Launch Navigation Co.

Sin Chen Lard Manufacturing Co., Ltd.

OIL

China's Petroleum Wells.—A recent investigation shows that China possesses petroleum wells in the following provinces :—

Chihli	22
Kirin	2
Yunnan	17
Kiangsu	5
Hunan	4
Szechuan	3
Kwangtung	1
Fengtien	4
Kweichow	13
Shensi	8
Kwangsi	4
Kiangsi	4
Hupeh	2

The total throughout the country is 91 wells, the best of which are in Chihli, Kweichow, Yunnan and Szechuan.—*The Chinese Engineer and Contractor (Chinese).*

Chinese Oil Discovery.—Reports of the discovery of an amazingly rich field of oil, including many gushers, and a quantity of natural gas in Southern China, have been received by the department of commerce. A recent article in the conservative London *Financier*, also forwarded to the department, speaks in glowing terms of the value of the new oil find.

Oil in Sarawak.—Large quantities of oil of good quality are reported to have been discovered in Sarawak, where the Anglo-Saxon Petroleum Company has been prospecting for a considerable time.

A. P. C. Sells Fuel Oil to Japanese Government.—The Asiatic Petroleum Co. (British) has recently completed a contract (through the Rising Sun Petroleum Co.) to furnish the Japanese government with 200,000 tons of fuel oil. When this contract is fulfilled the existing tanks of the Japanese government will be filled to capacity.

PUBLIC WORKS

Canton Planning Committee.—The city of Canton recently formed a planning commission, under the department of public works, for the purpose of studying and preparing a program of municipal improvement. The commission consists of nine members with the commissioner of public work as chairman. The other members are the three divisional chiefs and two other engineers of the public work department. Besides, there are three foreign engineers invited by the mayor to become honorary members of the commission. This commission is chiefly of a technical nature.

RAILWAYS

Light Railway Extension, Kirin.—It is reported that the Tien Doo Light Railway Co., Kirin, operated under Sino-Japanese management, has recently increased its capital and established branches at Lung-tsing-ching and Loh-dao-kew in Yen-ki.

Harbin-Heiho Railway.—It is reported that General Chang Tso-lin favors the construction of a railway from Harbin to Heiho and that General Woo Tsing-sun, tuchun of Heilungkiang, the promoter of the scheme, is appropriating funds to carry out the work.

Electric Locomotives for Japan.—The Westinghouse Electric International Co. has received from the imperial government railways of Japan an order for two electric freight locomotives. These locomotives will weigh 62 tons and have a capacity of 1,000 h.p. each, will operate on the 1,500-volt direct current system.

Shanghai-Hangchow-Ningpo Railway.—The *Sinwanpao* reports :—The Shanghai-Hangchow-Ningpo Railway is asking the British Corporation to allow the railway to have a loan for the repairing of Tsao-Wo-Kiang Railway bridge and the construction of a railway between Shaohsin and Tsaowo, offering the railway income of the line as security.

Extension Work on Peking-Suiyuan Railway.—The Peking-Suiyuan Railway Administration is contemplating the extension of car sheds at Nan-kow, Kong-chong and Ping-dee-chien and the building of lodging quarters at Ping-dee-chien for railway staffs which are estimated at about $167,500 in total. It is stated that the plan has been favorably received by the ministry of communications.

New Structure on Peking-Suiyuan Railway.—It is reported that the Peking-Suiyuan Railway Administration is contemplating the establishment of a signal station at Ning-yuan.

Joint Transportation Conference of Domestic Railway.—The 10th session of the China's railways joint transportation conference will be

held in the ministry of communications, Peking, at 10 a.m. on Oct. 12, ond a circular letter has been dispatched to the various railways which have joined the conference, notifying them of the date and place. The Kirin-Changchun, Szepingchar-Taonan, Chengting-Taiyuan, Chuchow-Pinghsiang and Canton-Hankow railways are also invited to send delegates to attend the meeting.

The Tokyo Underground Railway Co. Ltd., has decided to increase its capital to Y.80,000,000 from Y.10,000,000. A new route will be built between Shinogawa and Uyeno.

Buy Locomotives, Pay in Goods, are Terms Given to Russia by Baldwin.—The *Advertiser-Ledger* correspondent has learned that the Baldwin Locomotive Works is making overtures to the Soviet government to furnish locomotives to Russia on the basis of payment in commodities which would be carried out of Russia in the locomotives supplied. This would begin on a small scale, the Baldwin company maintaining control of the locomotives until the goods in payment had been delivered. The Baldwin company would act as agent in marketing the Russian goods, and the profits from this arrangement would go into the purchase of more locomotives in constantly increasing quantities, eventually restoring the Russian railway situation to normal.

American Enterprise in the Far East.—According to a telegram received, an American commercial delegation, headed by Dr. Abbot and Colonel Davis, which has been visiting Khabarovsk and the Amur district, has arrived at Chita, where negotiations have been opened with the Far Eastern Republic with regard to a concession concerning the Amur Railway. The delegation, it is stated, found in the course of its investigations that this railway had been completely demolished and that considerable sums would have to be spent on it before it could again be operated. The delegation proposed to form an American company to carry out the necessary repairs on condition that the Chita government granted it a concession with sufficient guarantees. The message points out that Japan is also interested in the Amur Railway. —*Reuter.*

Construction of Sing-ming-Fankao Railway again Mooted.—Some time ago the talk of constructing a railway between Sing-ming and Fankao in Fengtien was taken up by the chambers of commerce of the two districts, but the scheme was dropped owing to lack of funds. According to report from Mukden, the matter has now been revived by the local gentry. The construction cost will be equally subscribed by officials and citizens, and railway materials will probably be supplied by a certain Japanese firm at Mukden.

Railway Under Construction.—Construction work has begun on the Chinchow-Chiaoyang Railway. The line starts at Chinchow on the Peking-Mukden line and extends to Chiaoyang, Inner Mongolia. The decision has been made that the new railway will be made a branch line to the Peking-Mukden line in the expenses for the construction be provided from the income of that railway.

The Paotu-Suaiyuan section of the Peking-Suaiyuan Railway is now being constructed; and it is hoped to complete it by the end of this year.

Construction of the Chunhow-Chuping section of the Canton-Hankow railway was begun on May 1st. The cost will be met by an appropriation which has been set aside from a portion of the revenues of the Peking-Hankow and other railway.

Kaifeng-Tsining Railway.—The construction of a railway from Tsi-ning in Shantung to Kai-feng in Honan which was proposed by several Chinese gentry at Tsi-ning some time ago has been approved by the ministry of communications upon conditions that no foreign money shall be invested nor can it be placed on security for any loan. The line, when completed, will measure about 700 *li* in length and will link up with the branch line Chechow-Tsining railway at its Shantung terminus.

It should be known that Tsining, being favorably located in Shantung province, is fast growing to be a prosperous industrial town and will hold a more important position in business even that Tsinan when opened as a commercial port.

Improvement Work on Peking-Suiyang Railway.—In view of the recent collision of trains which occurred at Fusun station, the Peking-Suiyuan Railway Administration is preparing to take preventive measures against any further similar incident, and has suggested to install electric signals along the whole line of 1,345 *li*, which is estimated at about $2,400,000. But as the government financial condition does not allow such an extensive scheme electric signals will be established only at important stations at a cost of about of $600,000.

RIVERS, HARBORS, WHARVES AND DOCKS

The Imperial Land Colony Co., Ltd. was organized recently with a capital of Y.30,000,000 fully paid up for the purpose of reclaiming 30,000 *chobu* of land at Ariyake Bay in Kyushu.

Pootung to Dig a River.—For the relief of the flood famine at Nan-wei and Chuen-sha, Pootung, it has been suggested that a river be dug in the famine district with the service of famine sufferers. The work will cost about $20,000 which will be probably advanced by the Chinese banks.

Plans of the Chinkiang Customs Commissioner.—The commissioner of customs at Chinkiang has suggested that a road be constructed from King

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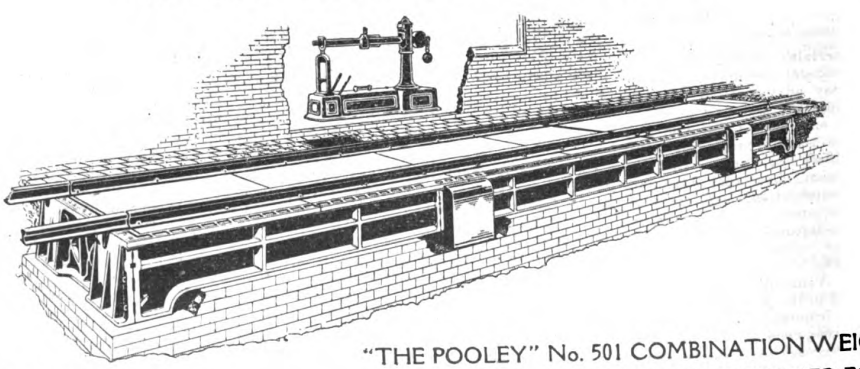

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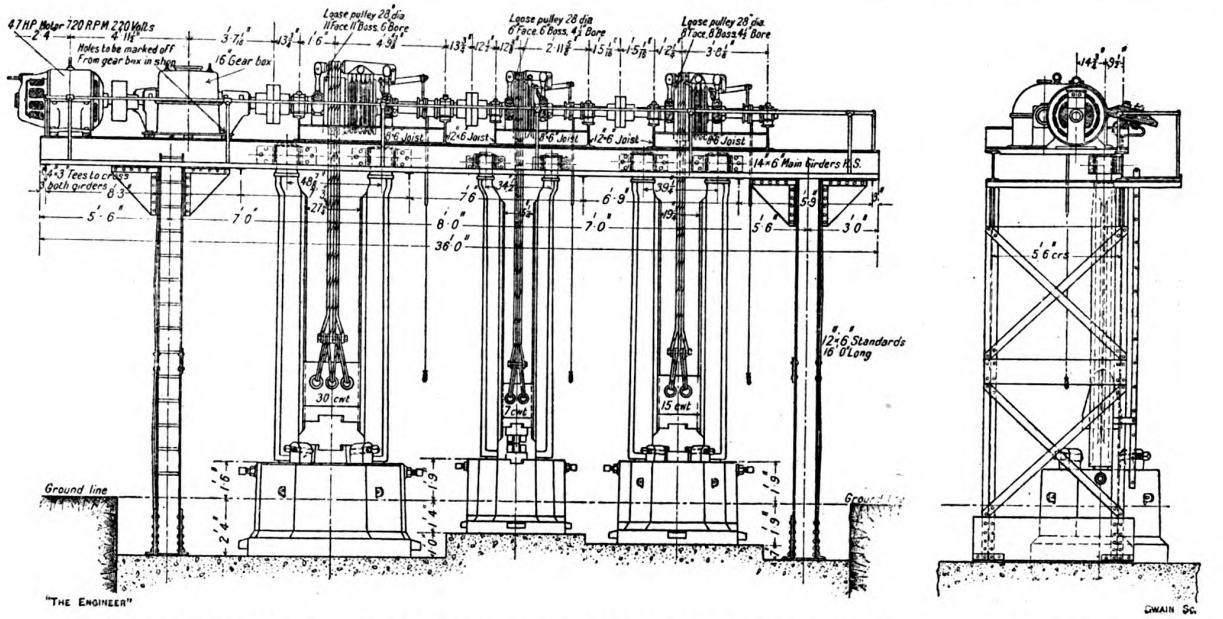
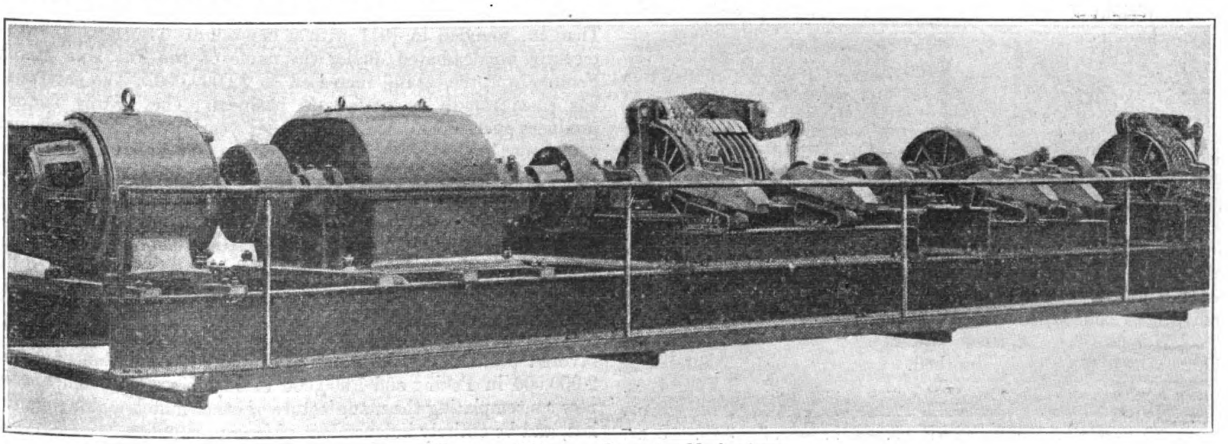


Electrically Operated Battery of Drop Hammers, manufactured by Brett's Patent Lifter Company, Ltd., of Coventry, England, supplied to the Tangshan Works of the Peking-Mukden Railway by Messrs. J. Whittall & Co., Ltd.

Drop-Hammer Battery for Tangshan Shops

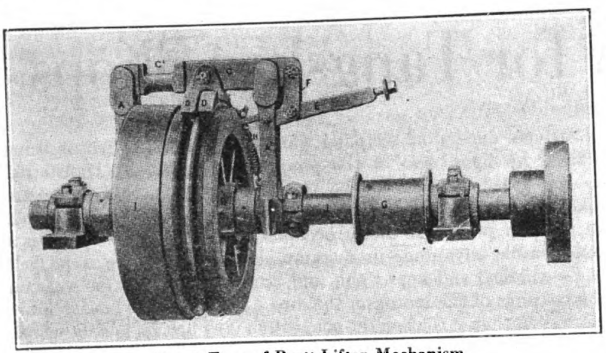
AN electrically-driven battery of three drop hammers has recently been completed to the order of J. Whittall & Co., Limited, by Brett's Patent Lifter Company, Limited, of Coventry. The battery, which is shown above, consists of a 30 cwt. and a 15 cwt. hammer for die work, with a 7 cwt. hammer, placed in between, fitted with roughing out or forming tools to act as a dummying hammer for the two larger sizes. It is intended for use in the engineering shops of the Peking-Mukden Railway.

As will be seen below, which shows the actuating mechanism of the hammers, the three lifters are mounted on a common shaft, which is built up in three sections with steel couplings, and is driven through double-reduction gearing, which is enclosed in an oil bath, an electric motor providing the motive power. The connection between the motor and gear-box takes the form of a centrifugal expanding coupling which permits of the motor being started up light, and of the power being gradually transferred as the speed increases. The makers point out that there are many advantages of such form of drive over the usual belt method. In the first place, the motor occupies no ground space, which is a considerable advantage in a stamp shop. Then there is no belt to be watched and kept tight, and, furthermore, that the wear on the bearings of the motor on the direct drive must be considerably more even than it is when the connection is by belt on to a fly-wheel. The gear wheels have machine-cut double helical wheels which run in an oil bath, and work with practically no noise when the plant is in operation. The enclosed gear-box has, of course, many advantages over open gears, especially when they have to work on a gantry which, under the load of the lifting hammers invariably springs, with the result that an even meshing effect is practically impossible.



Gantry and Hammer-Operating Mechanisms

The lifter now employed by Messrs. Brett is an improvement of the mechanism formerly used. It will be seen from the illustration below, that the appliance is actually very simple. The working of it is as follows: The steel grooved drum B is firmly keyed on to the shaft J, and rotates continuously with it. The pulley I at the side is loose on the shaft, and the rope connected to the shoulder C^1 of the shackle C and which supports the hammer tup rests on this pulley in the ordinary way. The two lifting levers A. A^1 are also loose on the shaft, and are bushed with phosphor-bronze. They are connected at the top by the shackle C, which is pivoted on the left-hand side to the top of A, but is free to move up and down in the slot at the top of the right-hand lever A^1. The friction blocks D, D are suspended for the shackle, and when the latter is pulled downwards it causes the friction blocks to engage with corresponding grooves in the steel drum. The number of grooves depends on the weight of the tup. The 30 cwt. hammer has six, the 7 cwt. hammer only one. The motion of the shackle is obtained by attaching a cord to the control lever E, and coiling it round the winch drum G. The cord is continued downwards to a suitable length and finishes at a handle which is arranged at a convenient height for the hand of the operator. A pull on the handle immediately engages the brakes, and the hammer rises; when the tension is taken off the brakes are released and the hammer falls. So far as the effort necessary was required, a child of tender years could easily have done what was required. The releasing of the brakes is effected by the action of the adjustable spring H. A practical feature of this lifter is that it gives an absolute control of the tup.



Latest Type of Brett Lifter Mechanism

The hammer can be lifted to any height and allowed to fall, or it can be suspended in the rods at any point and held perfectly stationary.

Following a test with recording ammeters, the three hammers were tested in rotation, and the following results were obtained:—

Weight of hammer.	Horse-power absorbed while lifting.
7 cwt.	24.1
15 cwt.	49.6
30 cwt.	83.14

In the third part of the test each hammer was, in turn, kept suspended, and the power to effect that condition was ascertained. This portion of the trial is, perhaps, the most interesting of the whole. There was no driver working the hammer, but to take the place of the pull of an operator a small weight was suspended from the end of the working cord, washers being added so as to give just the amount of weight required to cause the hammer to rise and remain in the rods. All the hammers were treated in this way individually, and the power absorbed was as follows:

Weight of hammer.	Horse-power absorbed.	Weight on handle.
7 cwt.	14.75	1-lb. 11 oz.
15 cwt.	26.82	2-lb. 8 oz.
30 cwt.	42.91	3-lb. 3 oz.

In the next test two of the three hammers were operated together, with the following results:—

	Power absorbed.
(*a*) 15 cwt. and 7 cwt. hammers working together	53.64
(*b*) 30 cwt. and 7 cwt. hammers working together	84.4
(*c*) 30 cwt. and 15 cwt. hammers working together	107.28

In this case there was a driver to each hammer, and both hammers were worked as in actual service.

The final test consisted in having all three hammers suspended together, with weights tied on to the handle. The actual power taken by the motor under this test was 75 horse-power. It is to be noted that under this equilibrium test—where the hammer is suspended in the rods—the power taken to drive is less than that absorbed under tests Nos. 2 and 4, that is to say, it is less than the power taken while hammers were being lifted.

Messrs. Brett point out that this last equilibrium test was very searching, for if there had been the slightest tendency for the lifters to overheat it would at once have become apparent. They assure us, says *The Engineer*, however, that, as a matter of fact, after all the above tests had been taken the mechanism was perfectly cool throughout, and they remark that the fact that it was so goes to disprove the theory that an external cooling device should be an essential feature of drop-hammer lifters. It should, however, be remarked that with this form of lifter the drums are continuously rotating in the air, which naturally has a cooling effect. We believe we are right in saying that no drop hammer had ever before been subjected to an equilibrium test of this character.

No particular comment is necessary on the general construction of the hammers, which conform to the general practice introduced by this firm many years ago. We may, however, remark that, whereas the brakes of Messrs. Brett's lifters used to be of phosphor-bronze, they are now made of a special material which has been invented by Mr. Herbert Froode, of Ferodo, Limited. The material is not, we understand, on the market in the ordinary way, but is made specially for Messrs. Brett, who state that it gives an excellent friction surface. The base blocks of the hammers are of cast iron, and they are of massive construction, being about fifteen times the weight of the tup. The overhead work is supported by strongly riveted steel girders, and the whole of the structure throughout is on ample and heavy lines. As is well known, there is no class of appliance which receives more severe punishment than a drop forging installation, and that fact is evidently kept well in view by Messrs. Brett.

Largest Match Factory in North China

The Tai Feng Match Factory, Peking, founded in 1906 with a capital of $120,000, and the Hua Chong Match Factory, Tientsin, founded in 1911 with a capital of Tls. 100,000, were recently amalgamated, under the name of the Tai Hua Match Factory, and the capital increased to $2,000,000. The enterprise has since rapidly expanded its business. The Peking factory produces over 25,000 cases of matches yearly, with 300 men and 200 women workers, and the Tientsin factory about 16,000 cases yearly with 700 men and 60 women workers. The output is valued at $1,000,000. At the expiration of the patent right on 1919, the government granted a renewal for a further period of fifteen years, expiring in 1934. Soon after, branch factory devoted solely to the manufacture of match-sticks (which had been entirely supplied by foreign producers) was established at Antung where material is abundant.

The capacity of the factories is steadily increasing due to its favored position as the sole supplier for a population of abou 2,000,000 in Peking and 1,500,000 in Tientsin. The company is now contemplating the manufacture of other match-making materials, and be entirely independent of foreign supplies.

Part of the labor agitation in China is carried on voluntarily by the liberal press and the National Students' Union. The press, voicing as it does the more enlightened sentiments of the nation, is sympathetic toward labor. The students consitute a formidable force, as illustrated by the nation-wide protest against the Versailles award of Shantung to Japan. Both are fighting labor's battle, partly because they believe that labor should not be sacrificed to further the capitalist's ambitions, and partly because they consider labor too weak to enter the contest single-handed.

One important phase of the agitation touches the present social renaissance in China. The development of industries has opened to women many vocational opportunities. In fact, some banks and trade corporations in Shanghai are encouraging woman workers to become bookkeepers and accountants by offering them pay equal to that of male workers in the same occupations.

But the emancipation of women has on the one hand intensified labor competition and on the other hand stimulated public agitation for the worker's health and safety. Recently the press of Changsha (Hunan) and of Shanghai fought vigorously against the recruiting of female employees by the Hou Sen cotton mill of Shanghai. Though the employer declared that great economic distress in the province had prompted him to offer the contract as a partial relief for the poor, the press immediately opposed the employment of women as an indication of capitalistic exploitation. Chinese society, it argued, cannot tolerate the enslaving of a large number of women merely to facilitate the selfish accumulation of wealth.

Labor Organizations

Approximately 200,000 factory workers are now organized into various labor unions in different cities. Up to the present they have been the most successful of all workers in efforts to secure higher wages and better working conditions. Their organizations are the most efficiently conducted among all the labor organizations now in operation in China. Next to them, in numerical strength, are the miners and railway men, who number about 185,000. In most of the trades the craft guilds are active and the influence of the labor union is not strong. The agricultural workers, who are more conservative than the craftsman, are at the present time the least organized. No accurate estimate of the number of the last two classes of workers is now available.

Of the more successful labor unions, the Returned Laborers' Union, composed of the returned laborers from France, merits particular attention. Besides attempting to improve conditions of employment, the union has a program of wide scope. While in France, thousands of the workers abstained from drinking and gambling in order to send their humble savings to support elementary schools in their home villages, and now the organization feels the wisdom of encouraging temperance and other character reforms among the workers on a large scale. Furthermore, the union isolates itself from politics in order to insure a free and unhampered development along purely industrial lines. With these broad objectives in view, the union makes the following declarations :—

> *Aims.*—The principal aims of the union shall be to co-operate with the workers to strengthen collective bargaining, to increase common knowledge through frequent association, and to promote a cordial but non-partisan friendship.
>
> *Resolutions.*—The members are resolved not to drink alcohol, or to visit prostitutes, or to gamble, or to smoke opium or use its derivatives.
>
> *Claims.*—The union claims the right to strike for improved working conditions, and the right to hold meetings or to make public speeches for promoting public welfare of the workers.

The union elects a chairman, a secretary, a treasurer, and ten councilors to take charge of various activities of the organization.

Yellow River Bridge

WE have already informed our readers that the competitive design and tender for this work was awarded to a Belgian combination made up of the Societe d'Etudes et de Construction, the Societe Belge de Chemin de fer en Chine, and the Compagnie Generale de Chemin de fer et de Tramways en Chine. Of these companies the two latter are well known in China ; for purposes of the bridge the first-mentioned is the active member, and the work of preparing the design and estimates was in its hands.

The Societe d'Etudes et de Construction was formerly known as the Societe Anglo-Belge de Construction and is a subsidiary combination between Messrs. S. Pearson & Son (Contracting Department) Limited, of London, the well-known contractors for public works and the Compagnie Belge de Chemins de fer et d'Entreprises of Brussels (formerly Compagnie Generale de Chemin de fer Secondaires) a well-known firm in railway engineering.

Two designs and tenders were prepared in mutual consultation, one by each of the above firms ; that of the larger spans by the Compagnie Secondaires known as "A" design, and a more economic design with more moderate spans known as "B" design by Messrs. Pearsons. It is to the latter design that the first place has been awarded.

The consulting engineers for the projects sent in by the combination were Sir Ernest Moir, Bart., of Forth Bridge renown, M. Clavier, Grand Cordon de l'Order de Double Dragon de Chine, who built the existing bridge over the Yellow River, and Mr. T. J. Bourne, C.B.E., who for over 30 years has been associated with Chinese railways, who built the Huai bridge at Peng Pu, and was in charge of the designs for Messrs. Pearson. The firm of Pearsons is known to the Chinese as the Ta Cheng Kung Ssu. It will be of interest to our English readers to know that British interests are associated with this new and important work.

Engineers' Club (London)

WHILST the writer was in England last year a project was on foot for forming an engineers' club in London. The scheme met with immediate support and it was decided that membership should be made as wide as possible and include those engaged in the design, superintendence, direction or control (technical or commercial) of engineering and its allied industries, such as metallurgy, chemistry, architecture, etc.

The following subscriptions were proposed:—Town members: £10.10.0. per annum; country members, £5.5.0. per annum; overseas foreign members, £2.2.0. per annum

Some difficulties have been met with, but the club was officially opened on September 1st, 1921, at the premises of the Road Club, 39 Coventry Street, near Picadilly Circus, which have been taken temporarily for the purpose. The membership already exceeds 2,000 including a number of overseas men.

A commencement in this manner was considered advisable because the present is not an opportune moment for a scheme involving heavy financial outlay and even were it possible to start building suitable premises two years or so would probably elapse before the club could be got going.

The final premises decided on will have bedroom, lunching and dining accommodation as well as smoking room, billiard room, writing room, card rooms, etc. Ample sleeping arrangements are a cardinal feature of the scheme, and provision for the welfare of overseas members will be a foremost item in the organization.

The writer felt that the foregoing facts should be brought to the notice of interested parties in China and he has been provided with official forms and authority to take the present action. Membership application forms can be had from : Mr. H. J. SMITH, M.I. Mech. E., c/o General Electric Co. (of China), Ltd.

The Statistical Aspect of British Railway Operation Methods

(Contributed)

THAT comparisons are odious is unquestionable, but that they are instructive is some times overlooked especially by a conservative race. In any case the contrast of vital railway operation statistics on which labor conditions have little or no bearing gives much food for astonished thought when the railways of the United Kingdom are considered vis à vis other countries.

Take the case of that most vital of all railway operation figures average tons per train. The following table is illuminating :—

	Average Tons per train		
United Kingdom	March 1921 .. 123.52 tons July 1920 .. 135.35 tons	Cape Gov'nt Rlys.	
United States	445	1916 142 tons	
India	189		
Japan (1918	142.6	128	(1916)
Germany	240		
Chinese Government Rlys (1919) ..	270	257	(1918)

The arresting fact here is that the British railways in this respect are to be classed below Japan, a narrow gauge country. An examination of the factors controlling tons per train merely confirms the suspicion that railway operation in Great Britain leaves somewhat to seek.

Tons per train is controlled largely by gauge limiting gradients, rail weight, rolling stock equipment, empty wagon mileage and full loads when trains are run.

With regard to gauge railways of the United States, United Kingdom, China and Germany are standard 4-ft. 8½ and 2-ft. with negligible exceptions. India has four gauges 5-ft. 6-in., metre and 2-ft. 6-in. the various approximate mileage under each on the 1919 report being 16, 742, 13, 226, 2650, 638 while Japan and South Africa have a 3-ft. 6-in. gauge w th a considerable mileage of 2-ft. 6-in. gauge the mileage of 3-ft. 6-in. gauge in Japan being 6,125 and that of the narrow gauge 1,465. The effect of gauge on train load for gauges of a metre and upwards is slight for, given the rail and weight, locomotives can be designed to handle loads up to the full capacity of the rail, but for gauges below this conditions of stability and the necessity of limiting piston speed have a decisive effect on design which increase rail weight cannot counteract. The most vital effect of narrow gauge is its effect on line capacity owing to lower speeds.

From the previous paragraph it will be observed that the British railways suffer no real handicap from the gauge question, and the same conditions obtain with regard to limiting gradient the ex-European Railways in the list operating considerably heavier grades on their first-class lines. Thus in China limiting grades for easy country are 1 in 150 while in mountain districts 1 in 30 is allowed, two such railways being included in the report for China from which the figure of 270 tons per train is obtained. Again Japan is hampered by a limiting gradient of 1 in 40 on important lines and also has to operate at least two rack sections. while the Indian Railways are handicapped by limiting gradients of 1 in 80 for the 5-ft. 6-in. gauge line, 50 for the metre and 1 in 30 for the 2-ft. 6-in. Practically similar conditions are met with in South Africa where grades exceeding 1 in 40 are operated and 1 in 40 is the ruling grade throughout the country.

In the matter of rail weight the most vital factor after gradients in its effect on train load the home railways occupy an exceptional position, the 90 to 100-lbs. rail being general and the 80-lbs. rail rather exceptional for first-class lines. The railways contrasted have the following rail weights :—

United States 80 to 100-lbs.—85-lbs. being general.
India 79 to 100 on the 5-ft. 6-in. gauge, 50 and 41 on the metre gauge, 30-lbs. on the 2-ft. 6-in.
Japan 60 to 75 on the 3-ft. 6-in. gauge.
Germany about 85-lbs.—18-ton axle loads.
China 85-lbs.
South Africa 80 to 60 the mileage under 80-lbs. rail being comparatively small while a 35-lbs. rail is standard on the 2-ft. gauge lines.

The effect of rail weight on train load is, of course, to cut down the allowable axle loads on locomotive drivers thus limiting adhesion and haulage capacity. While it is recognized that there are other vital factors effecting average train load such as empty wagon mileage, gradients, etc., the following table for three Indian gauges is unquestionable illustrative of this effect :—

Railway	Rail Weight	Train load
	5-ft. 6-in. gauge	
Bengal Nagpur	90	298
B. B. & C. I.	69	310
East Indian	85	317
G. I. P. Railway	100	215.5
	Metre Gauge	
Assam Bangal	50	109
Bengal A. Western	50	113
B. B. C. I.	41½	137.3
Burma	50	138.9
	2-ft. 6-in. Gauge	
Nagpur Chindwara	30	78.3
Kalka Simla	30	22.3
Trans Indus	30	25.2

The above figures are for the first half of the year 1917-18. This table also sufficiently indicates the effect of gauge and rail weight on reducing the average train load for a country such as India with a considerable mileage of mixed gauges. Yet India as a whole shows a better average by over 60 tons than the British railways equipped to more or less uniform and infinitely superior standards. In the case of the United States, Germany and China countries where equipment is more or less to home standards it will be observed that average tons per train is enormously in excess of that obtained in the United Kingdom. In the case of China this average is much reduced by inclusion of a metre gauge line operating traffic over a line equipped with a 56-lbs. rail and having a limiting grade of 1 in 48. Yet the average of this line in 1918 was 105 tons per train.

The mileage of 2-ft. 6-in. gauge in Japan and 2-ft. 0-in. gauge in South Africa would also, of course, have a lowering effect on average train load.

The effects on train load of rolling stock equipment empty wagon mileage, are so closely related that they will be dealt with as a whole.

Thus in the first place it is obvious that necessary equipment is limited by line capacity in the first place, that is number of tracks and if single tracks frequency of crossing places. Line capacity again is further limited by average speeds. In this respect the British railways occupy a vastly superior position as practically all important lines have four tracks in congested districts with separate tracks for fast and slow goods, while single track mileage is almost negligible instead of being usual in the case of all the ex-European railways considered. The British railways should, therefore, be in a position to cope with a vast traffic with rolling stock of a total car capacity (for tonnage offering), giving far less margin than the other railways considered, for line capacity aside England must be a country of conspicuously short hauls. Average speeds must be considerably higher than lines in the majority of cases single tracked.

Further in the question of empty wagon mileage the British railways should be in a superior position to the railways considered for they are not faced with the problem of dealing with traffic which at certain seasons of the year sets in a fixed direction entailing long return hauls of empty stock. As there is no return tonnage the consequent reduction in average train load is enormous for these return train miles are totally unproductive, whereas the

March a bad month. July 1920 figure is a better indication.

direct opposite must hold in Great Britain with its vast import and export trade. There should in England be always a high proportion of return tonnage and average train-load should show this which it certainly does not. The percentage freight upon capacity hauled in the United Kingdom should be considerably superior to any of the railways under consideration. The train-load figure indicates no such superiority.

Shortage of rolling stock might be alleged as an excuse for poor train load as in this case cars when unloaded must be hauled away at once wherever the demand is most immediate instead, of waiting for a load in the immediate neighborhood. This, of course, is conducive of excessive empty wagon mileage with consequent reduction in train load. With plenty of return tonnage as must be the case no such excuse can be advanced.

Further with conditions as above number of loads per car per year or annual tons per ton of car capacity should be exceptionally high on the British railways if cars are unloaded with promptitude and demmurrage rates made sufficiently exorbitant. So far as is known no figures for either percentage freight upon capacity hauled or number of loads per car per year are available for the British railways. On the Chinese railways, which are lamentably short of rolling stock and where the average haul for the system is 184 kilometres—115 miles (the least being 67 kilometres and the maximum 310 kilometres)—the number of loads per annum per car reaches the high figure of 75 the maximum being 204 for a short mineral line—45 miles average haul—and the minimum 31 for a line run at a loss. The time allowed for unloading on the Chinese railways is 12 hours.

In connection wih rolling stock equipment it is of considerable interest to contrast the equipment for dealing with traffic of varying density.

Country	Goods Traffic Tons per mile	Trains per day *	Engines per mile	Wagons per mile	Average haul
United Kingdom 1912	22,300	50.4	1	33.5	55.87†Mch. 1921
United States 1911	7,420	14.2	0.25	8.8	149 miles
Bengal Nagpur 1918	3,575	24.9	0.27	8.06	305 miles
Bombay Baroda 1918	2,400	23.	0.29	7.1	356 miles
East Indian 1918	9,300	41.7	0.51	12.4	385 miles
The above 3 Indian lines are 5-ft. 6-in. gauge.					
S. Africa 1916 ..	1,460	10	0.17	3.13	184 miles
China 1918 ..	5,320	12	0.037	2	115 miles
Japan 1918 ..	9,370	27.2	0.543	8.8	103 miles

Country	Total Wagon capacity Tons	Number of loads per car per year	Per cent. freight on capacity hauled	Average capacity per vehicle tons.
Bengal Nagpur ..	233,000	30	50%	16.5
Bombay Baroda ..	176,000	19.8	44%	18.7
East Indian	592,000	25.2	44.7%	17.0
S. Africa	547,185	24.6		20.6
Japan	467,021	107.5	51%	10
China	246,849	75 estimated	36.5%	24

Number of loads per car per year is, of course, obtained by dividing wagon capacity by total tons carried per year and if on the rather extravagant assumption that the average car capacity of goods vehicles in the United Kingdom is 10 tons it will be found that annual number of loads on the English railways is about 68 a very poor figure considering the enormous tonnage § available, the short haul and very high line capacity of the English railways. The figure means that the average time for each car to load, unload and travel is 5.35 days a figure indubitably capable of reduction for as volume of traffic increases so should number of loads per car per year and the tonnage per mile offering on the United Kingdom railways is enormously the greatest in the world. The number of loads per car per year should be at least twice what is surmised when the exceptionally favorable conditions are considered.

While it is recognized that it is impossible to dogmatise without an exact knowledge of local conditions the above freight stock statistics indicate that the Japanese railways are very efficiently run but that a higher capacity wagon as on te South African railways might be introduced with considerable economy a reform which must be introduced sooner or later on the British railways.

The following table indicates the percentage dead weight to capacity for various classes of British-built goods coal wagons. Comment is superfluous :—

Capacity of wagon	Tare of wagon	Per cent. Dead Weight to capacity
8 Tons	5.5 Tons	68%
10	5.8	58%
20	8.2	41%
25	10.17	40%
32	13.10	41% Hopper wagon all steel
40	16.7	41.6% ,, ,,

Further the low percentage freight on capacity hauled for China's railways is an indication of higher empty wagon mileage as the result of inadequate rolling stock while the small number of loads per year on the Indian railways appear to indicate over equipment in spite of the very long hauls.

The question of what is adequate or inadequate in the matter of rolling stock is a particularly thorny one but it would appear that it should be considered from the following point of view. Thus take the case of a line equipped with 60-pound rail, single track with crossing stations at 5-mile intervals and with a limiting grade of 1 in 120. Goods trains on such a line would not exceed a car capacity of 400 tons and if we assume that freight is 50 per cent. of capacity hauled tons of freight per train should be 200. Then if the average haul is 100 mile each 100 miles of line should be equipped with a car capacity of 400 multiplied by the number of necessary trains obtained by dividing the daily tonnage available by 200 tons. This number of trains is, of course, limited by line capacity which is, say, 32 goods trains out of a daily total of 36—four being passenger trains—for a single line as above. Thus the maximum daily capacity of a single line as above is about 6,000 tons per 100 miles and for this 12,000 tons of car capacity is required of Number 4/30 tons cars per mile. Passenger stock can be treated on the same basis with an assumed relation between seat mileage hauled and seats occupied generally about 25 per cent. The above, of course, assumes a daily motion of 100 miles per car and neglects stock not in motion. This might be true for passenger stock only on double-track lines but for goods stock is incorrect for single-track lines at least and probably double track. Thus in the U.S.A. daily movement per wagon is 28.1 miles with a 30-ton load while in Japan it is 58 miles and in England about 15 miles and 1 ton. Figures for goods stock should thus be increased.

Without many essential statistics either not available or not recorded criticism or even intelligent interest in the operation of the British railways is an impossibility. All that can be surmised from the very favorable conditions under which British railways are placed in the matter of gauge, rail weight, line capacity, short haul, etc., is that trains are either not loaded to capacity, or that empty rolling stock is not used ‡ or, unnecessarily moved, or again that there is excessive delay in loading or unloading stock. If the need for rapid transit of goods is conducive of running trains which are neither loaded to full capacity of stock hauled nor to the haulage capacity of the locomotive then those interested on railway

* This figure obtained by dividing daily train miles into mileage is for all classes of trains. Goods trains per day on the three Indian lines are 10.3, and 17 while in China and Japan the figures are 6 and 9.

† Coal, coke and minerals the bulk of tonnage 46 miles only. Train miles per train hour 8.86. Train miles per engine hour 3.36 for freight traffic.

§ Freight ton miles month of March 1921 1,209, 571, 140.

‡ This is a probable corollary of private wagon ownership.

transport should be called upon to bear one more hardship that of running business on larger stock, but it is not believed that this can be the cause of much uneconomical running for the bulk of the tonnage carried must be minerals or manufactured goods for which rapid transit is not urgent. For such commodities there can be excuse for running under-weight trains.

The question of rapid loading and discharge for mineral traffic can be dealt with by the introduction of the high capacity hopper wagon with high level facilities for bin discharge, while for small consignments the introduction of fast electric traveling cranes of the gantry* type spanning several sidings should surely be feasible. Further it would appear to be advisable to throw the onus of collection and delivery perhaps even discharge and loading of cars on transport companies or even consigners or consignee.

Other obvious reforms applicable to all new work and renewals are as follows :

The substitution of the flat-footed for the bull-head rails. With the 90-lb. 30-foot rail with 12 sleepers under this would effect an economy in chairs of 90 tons of cast iron per mile valued at least £1,300 at the present price of pig iron.

The introduction of the high capacity wagon for reasons previously detailed and for the economy effected in shunting and marshalling, etc. The introduction of the Janney or other automatic coupler which would eliminate much of the risk† incurred by shunters and facilitate more rapid movement of cars. Further this reform would render the feasible introduction of the continuous brake for all stock, another change making for increased speed of operation.

As regard personnel the following table provides a contrast :—

Country	Year	Employees per mile	Employees per 100,000 train miles	Train Per day
United Kingdom	1912	Total 26 P.W. Dept. 2.83	147	48.5
Canada	1915	,, 3.37	199	
United States ..	1916	,, 6.25 P.W. Dept. 1	128	14.2
France	1912	,, 13.9	139	
India	1915	,, 17	382	
Japan	1918	,, 20.8 P.W.D. 2 to 3	213	27.2
China	1918	,, 18.5 P.W. Dept. 6.1	435	12

These figures seem to indicate that there is room for economy if we contrast the figures for the United States and ourselves making allowance for the greater traffic density. The superiority of the United States is without doubt due to the use of machinery to a greater extent than is customary with us a remark perhaps still applicable to most of out industries. This consideration apart it would be appear that considerable reduction could be made in the permanent way department. ‡

With regard to locomotive performance the following statistics indicate no bad performance for the home lines :—

United Kingdom	1914	25,300 miles per locomotive per ann.
United States ..	1914	27,300 ,,
Japan	1915	26,600 ,,
China	1918	29,700 1919 29,783 ,,

Other minor reforms which would effect considerable economy are the institution of the Pullman car system giving much greater seating capacity per passenger car. Another necessary innovation should be modern coaling plants on the hopper system for fuelling engines. Something should be done to stimulate interest in the study of railway economics, a branch of railway science totally neglected in British educational institutions as is also the study of railway location, which receives equally scant attention while being perhaps the most vital importance. There can be no greater mistake than the supposition that an efficient surveyor is qualified to locate a railway.

Nationalisation has been definitely decided against for the grouping system but for those opponents of the principle the following facts are presented in refutation of the fact that absence of competition is conducive of inefficiency and stagnation.

The Japanese railways were nationalised in 1906 when the total mileage was 4371 miles. The mileage at the present is just under 6,000 miles while enormous betterments have been carried on in the interval. Passenger traffic has more than doubled itself and the cost of transport has fallen, while goods traffic is more than four times its original volume with a considerable fall in rates as well. Rates have fallen as follows :

	Year 1906	Year 1916
Passenger fares	.. Y.0.0155 per mile	Y.0.0134
Goods rates	.. Y.0.0199 per ton mile	Y.0.0166

In other respects the following statistics indicate at least that government control has done no harm.

Year 1906	Average total load per goods wagon	7.1 tons
Year 1916	,, ...	9.9 ,,
Year 1918	,, ...	11.6 ,,
Year 1906	Average load per train . 71	tons Number of cars 20
Year 1916	,, . 128	tons Number of cars 28
Year 1918	,, . 142	,, 28

The above figures speak for themselves.

Again the government railways of China have been uniformly and increasingly prosperous in spite of the fact that the system of foreign loan agreement under which the system has been constructed tends towards uneconomic de-centralisation and plurality of officials. There are, for instance, in a system totaling 3,465 miles 14 separate administrations ascribed mainly to this cause yet the return on capital invested was 10.9 per cent. for the year 1918. The Peking-Mukden Railway the nucleus of the system has paid dividends of the order of 20 per cent. since 1905.

The system of nationalisation has also been applied to the railways of South Africa. They are at any rate solvent and pay dividends which have risen from just over 3 per cent. in 1914—a slump year—to just under 5 per cent. (£4.13.0 to be exact)—in 1916.

Unquestionably nationalisation would eliminate much competitive and wasteful construction, it would do away with traffic canvassing, and reduce enormously the cost of advertisement while considerable economics could indubitable be effected in personnel. Thus there is very little question that the numerous privately owned stations serving each of the great cities of the country are an extravagance as much now as when built for they occupy much wanted land and must be very costly in the matter of interchange traffic. There is little question that they would never have been allowed under a centralised control. As regards personnel the consolidation of 132 companies cannot fail to effect economies of which the elimination of directorates drawing £200,000 a year must be considered by no means the most important.

The great benefit of nationalisation would be the introduction of co-operative working between the railways and the common use of rolling stock. The system of private wagon ownership must be eliminated for efficiency of working and economy of national capital. Further there is unquestioned need of centralised control of routes to be followed and ports of destination to ensure economic distribution of work for the railways and the avoidance of unnecessary congestion.

While it is recognized that reform is a slow and painful process the large deficit for the year 1920 is a sufficient indication of its urgency. Under the stimulus of a great war Great Britain is said to have revolutionised her industries and she would do well to immediately follow the American example of 1866 and apply the same process to the railways. Without railway efficiency British industries cannot be thoroughly modernised; cheap and abundant fuel and efficient transport are the life blood of a country.

* This would only be applicable to loading open cars.

† In 1910 1 in 553 shunters employed were killed and 1 in 10 injured. The total shunters employed was 13,381.

‡ British track is incomparably the best in the world. It is over excellent and uneconomic.

the installation in Kyobashi, Nihonbashi and parts of Kojimachi and Shibla wards. A large trunk line will begin at a point known as Shibasosobashi in Shiba and traverse the Ginza street, along which lies the main shopping centre. Another line will begin at the Nijubashi gate of the imperial palace and, traversing Hibiya Park along the street car lines, will discharge into Tokyo Bay at Shibaura. This line will be of concrete and will measure 12-ft. across. As a temporary measure, sewerage from Kand, Ushigome, Azabu, Akasaka and Shiba wards will be released through this line.

Extended Fire Alarm System Being Planned, Tokyo.—Extension of the fire alarm system in the streets of Tokyo is soon to be carried out by the Tokyo Fire Brigade at the instance of Mr. Ogata, chief of the brigade. Mr. Ogata has just returned from a tour of the United States and Europe where he studied metropolitan fire departments. The proposed extensions contemplate an increase of fire alarms from 76 to 3,000. The apparatus is to be of the latest type. Installation in the suburbs also is planned, it is said.

Public Works, Kwangsi.—The civil governor of Kwangsi has drawn up regulations for road construction, stipulating that a city road averaging 50 *li* in length should be built in each district every year. At this rate a total of 4,500 *li* can be completed every year. The magistrate in such district will be responsible for construction of city streets while the main roads will be built by the provincial government. It is also planned that a railway from Wuchow to Pai-suh will be built with foreign money and negotiations for railway loan are carried on with foreign capitalists.

The civil governor is also greatly interested in developing the mineral resources of Kwangsi. The tin and coal mines at Nan-tan and Foo-woo have been already operated by the provincial government while the opening of manganese mine at Wu-hsien and copper mines at Tung-an and Yung-fu is under contemplation. For industrial development, a series of schemes has been formulated including tanning hides, spinning cotton, casting iron, refining sugar and manufacturing camphor.

RAILWAYS

Chengchiatun Railway Extension.—The rails are to be laid as far as Paiyintala on the Ssuping-kai Taonan Line during November.

From the 23rd, construction trains are being run from Chengchiatun to Chienchiatien.

Ching Yu Railway.—The conference of Chinese chambers of commerce at Shanghai on October 26th, passed resolutions requesting cancellation of the French contract for the Chingyu Railway and mining rights in Kwangtung, Kwangsi and Yunnan.

Short Railway, Woosung.—According to the *Shanghai Journal of Commerce* the Woosung commercial port bureau is planning to establish a short railway line between Wangchupang and Taihsingmiao bridge. It is stated that the line is being established for the purpose of facilitating the business of the Great China Cotton Mill, of which Mr. C. C. Nieh, chairman of the Chinese general chamber of commerce, is proprietor. The line will be three and a half miles long.

New Korean Railway.—The light railway between Chochiwon and Chongju, capital of North Choongchong province, 14 miles in length, is now finished and the inauguration ceremony will take place on November 1.

Manila Railway Pays Dividend.—The Manila Railway (1906) has declared a dividend of 5 per cent. on preference and 5 per cent. on ordinary shares; balance forward £8,788. This is the first fruits of the reorganization of the company.

Proposed Railroad Between Kwangtung and Kwangsi, China.—A railroad connecting Kwangtung and Kwangsi is now planned by the authorities of the two provinces. The plan was proposed by Dr. Ma Chun-wu, governor of Kwangsi, who considered that by building the line the transportation in Kwangsi will be greatly facilitated and the industrial and commercial conditions of the two provinces will also be improved.

Transportation Facilities in Jehol.—With a view to facilitating the means of transportation between Jehol and the different parts of Fengtien, General Chang Tso-lin is planning the construction of a branch line connecting certain places in Jehol with the Peking-Mukden Railway at Chingchow. Another line will also be built connecting Chaoyang, an important centre in Jehol, with Chingchow. A section of the new line between Chingchow and Yichow has been opened to traffic.

Canton-Hankow Railway.—The construction of the Canton-Hankow railway, originally intended to start in the middle of the year, has been postponed until February, 1922, owing to political troubles in Szechuan and Honan. In the meanwhile, negotiations for a loan are proceeding with the Chung-Yin Syndicate for the construction cost of the Chuchow-Hungchow section.

Chefoo-Weihsien Railway Get American Loan.—It is reported that when the construction of the Chefoo-Weihsien railway was on the point of interruption, the Washing Co., an American firm, secured a contract for the continuation of the work at a cost of $18,000,000. The contract was signed by Messrs. Wang Ngao-kwan and Lien Ying-wang on behalf of the railway and Mr. Conspan representing the Washing Co. The following is a summary of the principal points in the agreement:—

(1) Rails, locomotives, wagons and other railway materials and rolling stocks for the Chefoo-Weihsien railway shall be exclusively supplied by the U. S.
(2) Before the signing of the contract, the railway shall get an international bank to guarantee payment.
(3) The railway line is to be divided into three sections with the first 75 miles long, second 40 and third 100. Payment is to be made in installments within six years after the completion of each section.
(4) In case of prolongation or construction of branch lines, U. S. shall be first dealt with, and without obtaining U. S. permission China shall be restricted from making any contract regarding the railway with any other foreign powers. In the event of any breach of the above provisions, China is liable to pay a fine of $50,000.

It is obvious that the above agreement is more a loan contract than a construction contract, especially in article four.—*Chinese Press Report.*

Electrification of Japanese Railways.—The official system for the electrification of the railways of Japan has recently been revised and a new electric bureau established. According to the plan now being worked out by the department of railways, the first steps will be to electrify the entire Tokaido line, whose traffic has been increasing enormously each year, from Tokyo to Kobe, and a part of the central line between Iidamachi station in Tokyo and Kofu, in the rear of Mount Fuji, where many tunnels make transportation slow. Electric trains will be used exclusively for passengers, freight trains being propelled by steam as at present.

Chingchow-Jehol Railway under Construction.—According to a telegram from Peking, the section from Chingchow to Nee-chow on the Chingchow-Jehol railway, about 120 *li* in distance has been completed and traffic between the section was inaugurated on November 10, 1921.

Chinese Eastern Railway Finances.—Mr. Sung Shiao-lien, director of the Chinese Eastern Railway, will issue bonds authorized by the shareholders' meeting, to the amount of $30,000,000 to be devoted to purchase of rolling stock, paying back salaries and maintenance expenses. A portion of the fund will be set apart for raising new troops to guard the railway.

Chinghsien-Jehol Railway Proposed.—The ministry of communications is considering the suggestion made by the authorities of Fengtien for the construction of a railway from Chinghsien to Jehol.

British Loan Reported.—It is rumored that the ministry of communications is attempting to make a loan with the Sino-British Syndicate amounting to $8,000,000 on the security of the surplus of Peking-Mukden railway. The fund is to be used for building a branch line on the Peking-Mukden railway, from Ching-chow to Chao-yang, and constructing a harbor for another railway.

Railway Shops, Japan.—The Government Railways of Japan have completed two new shops, one at Kagoshima and the other at Suida, Osaka. The Kagoshima shops will repair cars on the Southern lines in Kyushu. The Suida plant will take over part of the work assigned to the old shop in Osaka.

Kiangsi Railway.—The provincial government of Kiangsi has secured the sanction of the Peking government for the raising of eight million dollars domestic loan with the wine and tobacco receipts of this province, the stamp tax and one or two other local taxes as security chiefly for the repayment of the Japanese loans to the Nanchang-Kiukiang Railway Company. In default of payment, Japan will assume control of the line next year.

Harbin-Heiho Railway.—With regard to the construction of the Harbin-Heiho railway, the tuchun of Heilungkiang, promoter of the line, has telegraphed to General Chang Tso-lin reporting that a fund of $2,000,000 has been raised in his province and asking him to appropriate a large sum as there is still a great deficiency. A similar telegram has been sent to the government asking for fund.

Light Railways for Mongolia.—The ministry of communications has decided to build three light railways on the north border of China—from Hsuan-hua to Kwan-hua, from Kalgan to Urga, and from Jehol to Chi-feng, definite measures for the construction having been laid down by the ministry.

Traffic Opened on Chinghsien-Chaoyang Line.—Traffic on the Chinghsien-Neehsien section on the Chinghsien-Chaoyang Railway, a branch of Peking-Mukden Railway, was inaugurated lately.

Fushun-Shinching Light Railway.—According to report from Mukden, the construction of a light railway from Fushun to Shin-ching is under contemplation.

Light Railway Urged.—Mr. Tsao Jui, civil governor of Chihli, has wired to the government requesting to send experts to survey the proposed light railway on Shun-lung-shan Mountain.

The Mikawa Railway Company, Japan, has been granted a charter for the extension of its steam line by 9.41 miles to connect Sanage with Asuke, towns in Aichi prefecture.

Special Coaches for Prince, Japan.—The department of railways has decided to construct two special coaches for the use of the prince of Wales during his visit to the country. One will contain a dining room and a compartment for members of the royal suite. The coaches will be constructed at the Oi car shops at an estimated cost of Y.220,000.

Light Railway Project.—Tsao Kun has addressed communication to the Chiaotungpu requesting it to appoint several railway engineers to survey the Hsinglungshan route for the erection of a light railway to facilitate transportation of military necessities.

Kalgan-Kiakhata Railway Proposed.—With a view to facilitating communications, General Chang Tso-lin has telegraphed to the central government suggesting the immediate construc-

tion of the Kalgan-Kiakhta Railway, an important line for military service, which was taken up by the government some time ago. The ministry of communication is considering the suggestion.

Locomotives Ordered Ready for Shipment to China.—It is reported that the forty seven locomotives ordered from U.S. by Peking-Suiyuan Railway Administration have been fully completed and are now ready for shipment to China. Of the shipment seven are the largest over exported from America, each weighing 320 tons.

Chinchow-Chaoyang Line.—The new railway section, about 30 miles long, from Chinchow, on the Peking-Mukden line, as far north as Yichow, was completed at the end of last month and opened to traffic. By next year, the line is to be extended to the intended terminus at Chaoyang. This new section has been planned principally to carry the outputs of Hotien Colliery operated by the Peking-Mukden Line. A further extension into Inner Mongolia looks possible. It is also possible that the output of the Hsinchiu Colliery, operated under Sino-Japanese joint management, will also be transported by the new section. At all events a rosy prospect lies before the new section and this is thought to strengthen the chances of the much-talked-of reconstruction of Lienshan (Hulutao) Harbor (south of Peitaiho) in no distant future.

Railway Rolling Stock Held Up.—A large quantity of railway rolling stocks purchased by the Peking-Suiyuan Railway Administration has been held up by the customs, owing to customs duty amounting to $360,000 not having been paid.

New Minister of Communications, Chita.—In succession to M. Shaatoff (minister of communications of the Far Eastern republic), M. Milaekoff has been appointed. He has once served as a commissioner despatched to Amur province.

New Locos, Shanghai-Nanking Railway.—The Shanghai-Nanking Railway has received thirteen new locos manufactured by the North British Locomotive Company, Ltd. The cars were purchased through Jardine, Matheson and Company, Ltd. of Shanghai.

Canton-Hankow Railway Survey Stops.—The Canton-Hankow Railway officials have received instructions from Peking to suspend the surveying work on improvement of the location of the line south of Chuchow to the border of Kwangtung province, on account of lack of funds.

The surveying party has been recalled to Hankow where they are preparing and reports of the surveys on the Chuchow-Heugchow section already completed.

Cox Retires.—Mr. A. G. Cox, engineer-in-chief of the Canton-Hankow Railway is retiring from the Chinese government service, and will probably return home to England for a time. Mr. Cox is one the oldest foreign engineers in the railway service of the Chinese government, having served a term of more than thirty years as engineer on different government railways in China. Pending the appointment of a successor, Mr. J. H. Williams, the district engineer, will most probably act as chief engineer of the line. —*N. C. Star.*

Kin-Han Loan?—The Chinese press announces that General Wu Pei-fu has offered the Kin-Han Railway as security for a loan of $5,000,000 to be negotiated with a certain American firm. The report states that this plan has been supported by Marshal Tsao Kun.

Cable Car Line, Japan.—The construction of the cable car track between Gora Park and the foot of Sounzan mountain in Hakone has been nearly completed. Service is expected to begin before the end of this month. The line which is the first cable car service in Japan is 15 miles in length and forms part of the railway system on the Hakone mountains conducted by the Odawara Electric Railway Company.

Shimonoseki Tunnel.—Official announcement has been made by the Japanese railway department of the completion of the plan of the proposed Moji-Shimonoseki Tunnel. The work will be taken in hand from the beginning of the next fiscal year in April 1922. The tunnel will be constructed between Moji and Hiroshima island. The distance between the island and Shimonoseki will be spanned by an iron bridge. The Kyushyu end of the tunnel will be to the west of Dairi, some three miles from Moji.

Chungking Expansion.—A special commissioner and staff have been appointed to work on a plan which, if realized, will make Chungking one of the biggest commercial ports in China within ten years. The scheme will include the expansion of the present municipality to many miles beyond the southern bank of the Yangtze river, the institution of a tramway service and the maintenance of several boats. Several million dollars will be necessary to carry out this scheme and many prominent bankers and rich oversea Chinese have been invited to make investment.

Railway to Kelantan.—On November 1, through service between Kuala Lumpur and Kelantan will be established. The railway line between Padang Besar and Kota Bharu had been contemplated some time ago, but there were certain minor details which had to be perfected. It is now proposed to start the service with one train a day each way, every day of the week excepting on Sundays. The service will commence from Alor Star at 6 a.m. and will be through Padang Besar, then through the section of Siamese state railways, to Kota Bharu and then to Tumpat on the Kelantan coast. This journey will take in all 13½ hours. Visitors to Kelantan will only be able to see the new country that is opened on their return journey which will commence at 6.10 a.m. from Tumpat, reaching Alor Star at 7.35 p.m.

Railways for Celebes.—News comes from Macassar to the effect that the line from there to Takalar viâ Sunguminassa is making great progress. The chief engineer of the states railway department, Mr. Popping, is a very energetic man, with a practical outlook. The contractors, Volker, Hondijk & Co. keep the work going at full speed as long as there is daylight and are making good progress. But it has cost a great deal of time and trouble to get rolling stock from Java, and sand, sleepers, rails and other materials. Now, however, these have arrived, and everything possible is being done to push on the work.

The Jason belonging to the Blue Funnel Line and the Sommelsdijk of the Holland-Amerika Line have between them been unloading 7,000 rails from New York, each ten metres long, so that in a week's time something like three kilometres will have been laid down and the work pushed on further.

Railway Construction in the Outer Possessions—According to the *Bataviaasch Nieuwsblad* the governor-general has granted the concession requested for the building of a railway in South Borneo. As soon then as the necessary papers are ready the work will begin.

With regard to railways in Celebes, first consideration ought to be given towards constructing a line between Macassar and the Boni Plain; but this will not be practicable as long as Pare Pare remains the shipping port for that district.

A line between Pare Pare and the Boni Plain would not be profitable, while to build one between Macassar and Pare Pare is not to be thought of.

If those interested could be persuaded to relinquish Pare Pare as a port, then a line between Macassar and the country beyond might be taken into consideration.

The companies have also cast their eyes on Bali and Lombok. From an economical standpoint, Bali could certainly do with a railway, but as the technical difficulties are very great, little is likely to come of it.

The rivers run at right angles to the line along which the railway would be laid: there are a good many of them too, and most of them are very broad; so that the building of a railway would necessitate the making of many costly bridges. On these grounds then a railway would at present be quite out of the question.

Mukden Arsenal Light Railway.—The Mukden arsenal will construct a light railway to the Mukden station. The work will start next spring and funds provided by the provincial treasury.

Harbin-Heiho Railway.—It is rumored that the Chinese authorities have promised American and Russian capitalists to invest money with Chinese in the construction of the long proposed Harbin-Heiho railway and that negotiations regarding the joint enterprise are proceeding at present.

RIVERS, HARBORS, WHARVES AND DOCKS

Hongkong Harbor Scheme.—It is reported that Mr. William Chatham, C.M.G., M.I.C.E., former director of public works in Hongkong, who left for Home on retirement towards the end of last year, will shortly return to the Colony to take complete charge of the big harbor scheme planned by Sir Maurice Fitzmaurice, member of the well-known firm of Coode, Matthews, Fitzmaurice, and Wilson, consulting engineers for harbors to the Crown Agents for the Colonies. Mr. Chatham's local public works experience dates from 1890 when he arrived in the Colony as an executive engineer to join the government department.

American Coaling Crane for Dairen Wharves.—One of the four coaling cranes ordered from the United States has already arrived at the Dairen Wharves, the other three being expected there during the rest of the year. It is capable of loading 100 tons of coal in an hour.

New Dockyard for the Kiangnan Dock & Engineering Works.—It is reported that the ministry of navy has made a first appropriation of $100,000 to the Kiangnan Dock and Engineering Works for the construction of a new dockyard which calls for a total expenditure of $600,000 and that the work of construction will be actually carried out on the first of November, 1921.

Yangtze Conservancy Association.—The Yangtze conservancy works association with five different departments, general affairs, investigation, surveying research and financial—has been established at Nanking by members of the Kiangsu provincial assembly, and circular telegram has been dispatched to Hupeh, Kiangsi and Anhwei for co-operation to improve the mighty river and its tributaries.

Sourabaya Harbor Works.—In connection with the harbor works at Sourabaya, it has been found necessary to build more wharves at a cost of 50 million guilders. The work will be finished about 1928. New roads and godowns in the harbor area are estimated to cost about 10 million guilders. These should be completed in 1925. Work will also be continued on the harbor at Samarang. The erection of godowns and other improvements at the harbor are expected to cost about 4 million guilders. The work should be finished by 1924. It is calculated that the harbor work at Belawan will cost another 22 million guilders, and it has been decided to spend a sum of 1½ million guilders on dredging alone. The building of godowns, coolie lines, etc., is computed at 2 million yearly.

Liaoho Conservancy.—The ministry of finance has addressed a communication to the national revenue administration asking it to release the sum of $200,000 required for the Liaoho conservancy work.

Whangpoo Conservancy Board—Tenders for Stationary Pumping Plant.—The time limit for receiving tenders invited by this board's Notification 106 is advanced from the advertised date, October 30, to noon November 15, 1921, by H. von Heidenstam, engineer-in-chief.

Rangoon Port Development.—The newly created Rangoon Development Trust has recently sub-

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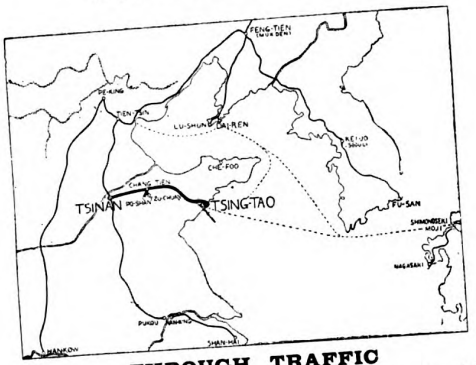


THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week. For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving. Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway. The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 9.30 p.m. arrives Tsinan 8.30 a.m.
Train No. 2 leaves Tsinan daily 8.00 a.m. arrives Tsingtao 6.30 p.m.
Train No. 4 leaves Tsinan daily 11.00 p.m. arrives Tsingtao 9.30 a.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

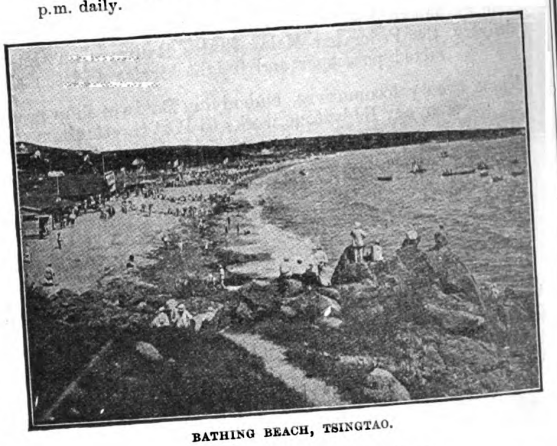
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

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THE GREAT HARBOUR, TSINGTAO

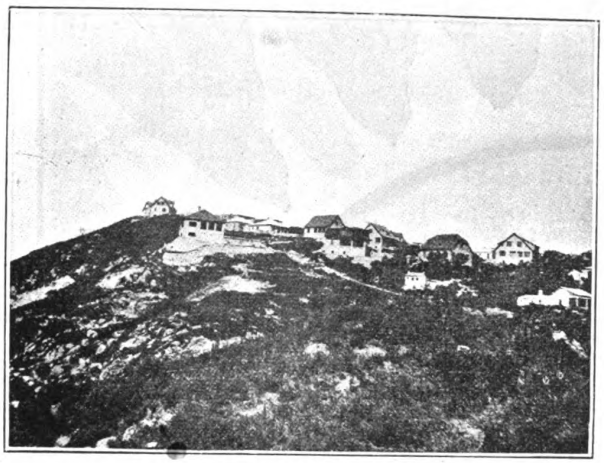
For Further Information, please apply to

THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU"

CODES: A.B.C. 5TH ED. & Al.

CHINESE GOVERNMENT RAILWAYS



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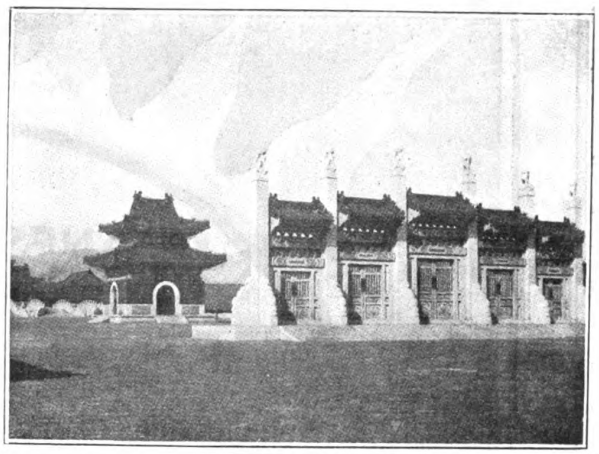

AT THE CHUNG LING TOMBS

PEKING-HANKOW LINE

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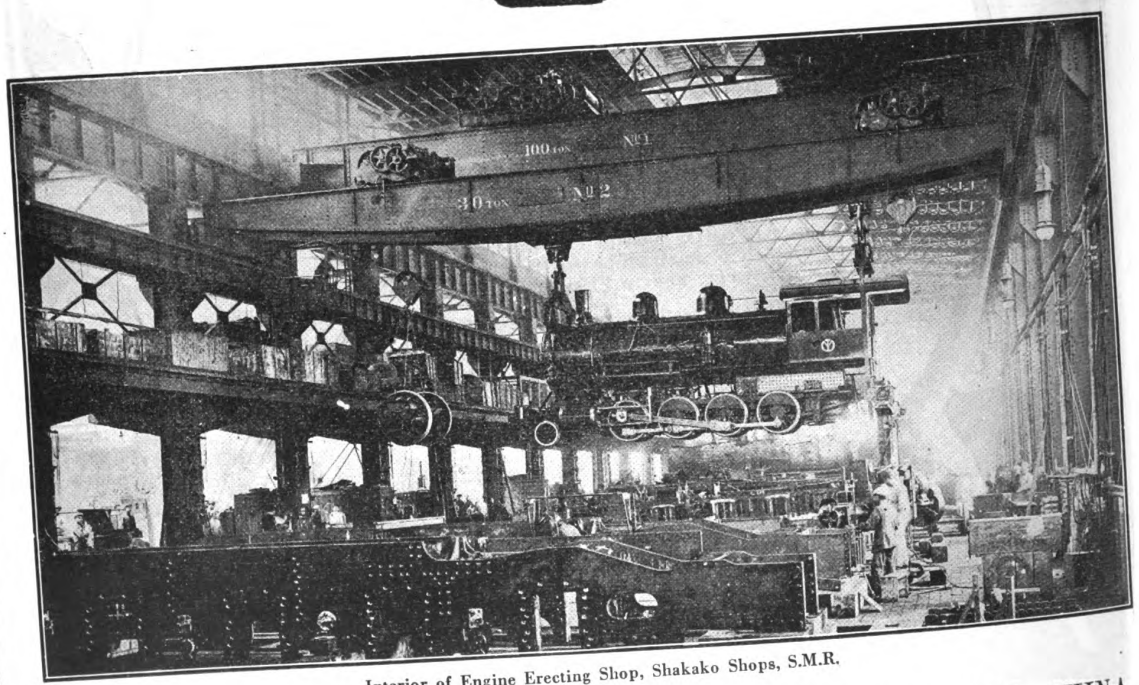
Telegraphic Address: "KINCO" Codes: A.B.C. 5th Edition Telephone East 1698

SOUTH MANCHURIA RAILWAY

SHAKAKO RAILWAY WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

LARGEST AND MOST COMPLETE IN ALL MANCHURIA AND CHINA

AREA OF LAND: About 300,000 Tsubo. OFFICES & WORKSHOPS, 14,000 Tsubo

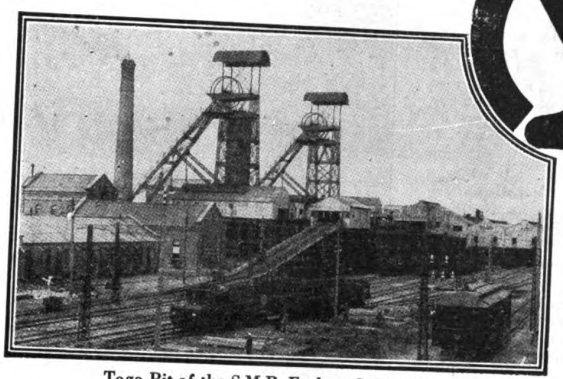
CAPACITY OF EXECUTING REPAIRS SIMULTANEOUSLY:

27 Locomotives, 36 Passenger Cars, and 130 Freight Cars, besides Constructing and Repairing other Railway Materials, Mining Machinery, etc. Employees: 5,000 Japanese and Chinese.

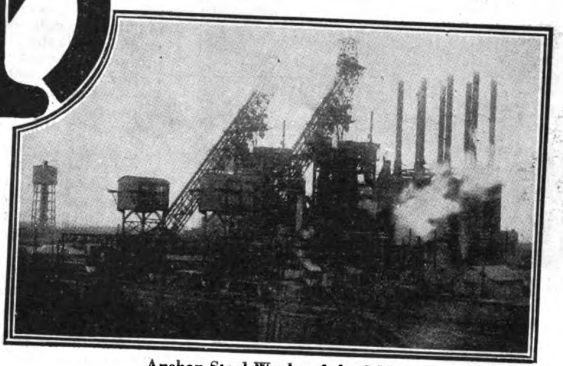
THE EAST IS EAST AND THE WEST IS WEST

SOUTH MANCHURIA RAILWAY

COAL IRON



Togo Pit of the S.M.R. Fushun Collieries



Anshan Steel Works of the S.M.R.

FUSHUN COAL

The Best Steaming Coal in the Far East | Fresh Stocks Always on Hand

Depots:

Dairen (Yingkou)	Port Arthur Tientsin	Newchwang Tsingtao

Agencies:

Chefoo	Takao	Osaka
Manila	(Formosa)	Nagoya
Hongkong	Batavia	Shanghai
Sourabaya	Yokohama	Moji
Singapore	South Seas	Saigon
Penang	Niigata	etc.

Also Sulphate of Ammonia, Fire Clay, and Talc

Pamphlets and Particulars gratis from any of the above Depôts and Agencies, and from the

MINING DEPARTMENT,
South Manchuria Railway Company, Dairen

ANZAN IRON & STEEL WORKS

New Enterprise Set Up Like Magic Amidst the Wilderness of Manchuria.

TRACT OF LAND: about 4,000,000 tsubo.

BLAST FURNACE No. 1 (with a capacity for about 350 tons per day) Opened to service on April 29, 1919.

BLAST FURNACE No. 2 (with a capacity for about 350 tons per day) Made ready for service on February 24, 1920.

MEANS OF TRANSPORTATION in the plant: 24 miles of railway and 2.5 miles of electric tramway in operation, with three light locomotives and a number of slag-, coke, and ore-cars of from 8 to 24 tons.

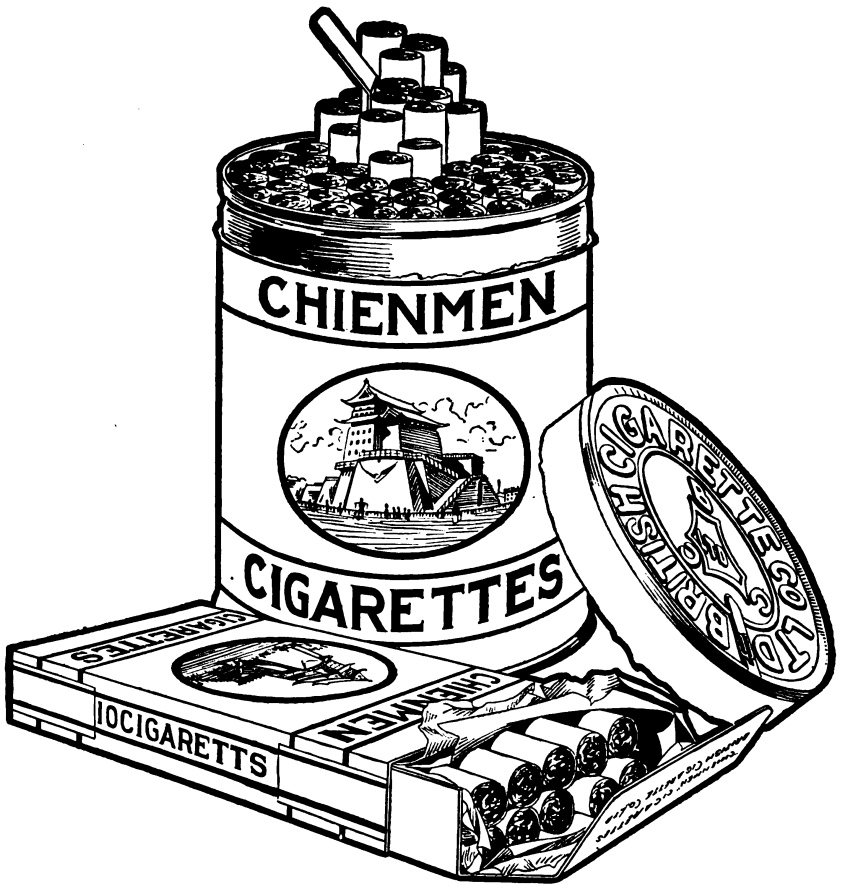
A NEW TOWN SITE of 400,000 tsubo, with the necessary roads and water and sewage services, laid out and rented to lessees.

OFFICIALS AND EMPLOYEES: 2,300 Japanese and Chinese.

BUT THE TWAIN HAS MET AND BLENDED HERE

CHIENMEN

Cigarettes



A brand well known to the "High Grade Cigarette Smoking Public" of China.

BRITISH-AMERICAN TOBACCO CO. (CHINA), LTD.

Distributors

大正七年七月十日第三種郵便物認可

A Rope for Every Purpose

American Wire Rope

United States Steel Products Company

Union Building

SHANGHAI

CABLE ADDRESS
"STEELYARD SHANGHAI"

Printed by the North-China Daily News and Herald, Ltd., for the Proprietor.

VOLUMER XVIII

Note: Vol.XVIII changes significantly in editorial style and content. There are many more in-depth political editorials containing the personal views of the publisher, G.B. Rea who had re-assumed the roll of Editor. In earlier volumes the editorial function had been undertaken by Australian W. H Donald. Donald resigned from the F.E.R., after disagreements with Rea over the latter's increasingly pro-Japanese stance. One victim of Rea's new editorial style is that for the whole of the year 1922 the customary pages of Engineering and Commercial Notes disappear entirely. These previously had contained many snippets of news about China's railway developments. Rea, however, substitutes pages of information about the development of roads and motor transport development within the country. It is almost as if Rea has forsaken railway travel in favour of the car.

January 1922
Full-page advertisements for:
South Manchuria Railway – Manchuria and Chosen Lines
Shantung Railway
Baldwin Locomotives : 2-6-2 locomotives built for the Peking-Hankow Rly.
Chinese Government Railways Peking-Hankow Line
South Manchuria Railway – Shakako Railway Workshops
J. Whittall & Co Agents in Shanghai for Ransomes, Sims and Jeffries
(boilers etc)

February 1922
Prairie Type Locomotives for the Peking-Hankow Railway Photograph and specifications of the 2-6-2 locomotives supplied by Baldwin.

March 1922
Railway Construction in China and Japan :-
Light Railway, Anwei The Woo Shun Coal Mining Company at Pei-lee-ching in Shih-hsien, Anhwei were to build a 25 li-long light railway from the mines to Ma-dao-ching.
Chukiang-Hsientu Railway, Hupeh.— The building
of a railway from Chu-kiang to Hsientu, local gentry planned to develop the rich mines in these districts.
Bridges Over Yangtze River. Dr. Waddell had recommended the construction of three large bridges.

April 1922
Advertisements for : -
Tzuchuan Coal - Part of the Shantung Railway Company.
South Manchuria Railway – Manchuria and Chosen Lines
Baldwin Locomotives : 4-6-2 locomotives built for the Peking-Mukden Rly.
Shantung Railway
Chinese Government Railways Peking-Hankow Line
South Manchuria Railway Shakako Railway Workshops

May 1922
The Consortium A long editorial about the doubtful "usefulness" of an international consortium of financiers held in Paris for the finanancing and development of China's railways etc.

The Kiangsi Railway Loan Report about a Japanese bank threatening to take control of this line because of its failure to pay interest and loan instalments.
The Railway Aspect of the Consortium Organization for China More editorial discussion about the financiers' "consortium" .
Full-page advertisements for:
South Manchuria Railway – Manchuria and Chosen Lines
Baldwin Locomotives : 2-6-2 'switcher' locomotive built for the Lung Yen Mining Administration
Shantung Railway
Chinese Government Railways Peking-Hankow Line

June 1922
The Chinese Eastern Railway An article by T. C. Yeh explaining the Chinese Government's position on control of this line.

July 1922
Poster - Shanghai Municipal Council Indian Sikh Policeman directing traffic. This precedes a special edition on motor transport in China. Not railways but included because I consider this coloured poster has great artistic and historic originiality.
Advertisement - Japanese Government Railways Through bookings for China.

August 1922
Sun Yat-sen Short editorial defending Sun from the wide-spread criticism of his role in the failed politics of China, including Sun's railway scheme.
The Effect of Civil War on China's Railways A contributed article about the serious consequences that China's civil was inflcting on her railways.

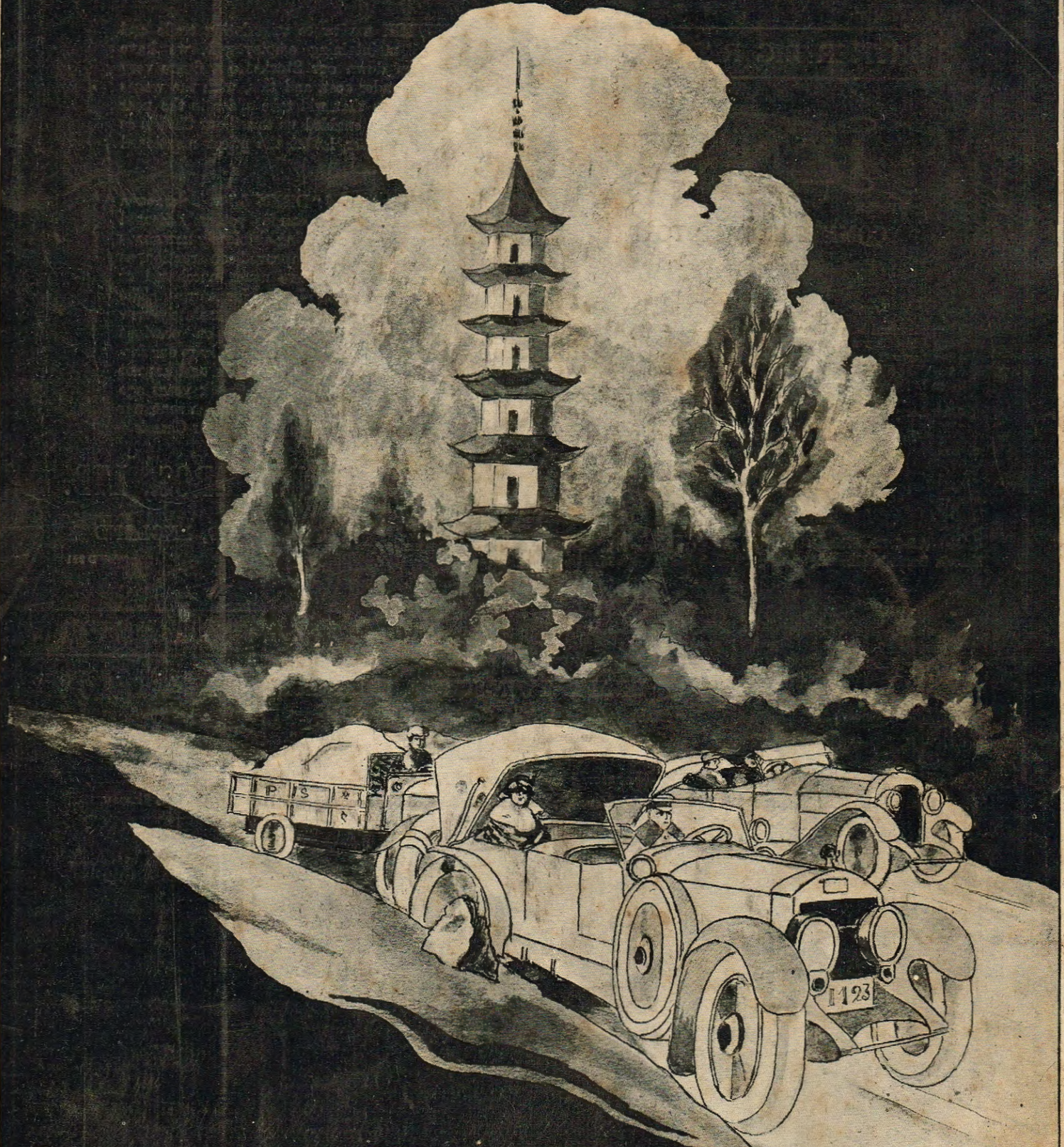
September 1922
Advertisement for the Drewry Car Co. of UK (manufacturer of railcars)
Advertisement for the American Locomotives Sales Corp.
Switching Locomotive For China Photograph and specifications of a 2-6-2 switching engine built by Baldwin for the Peking-Suiyuan Railway.
The Kochiu Tin Mines An illustrated description of the tin mines of Kochiu (aka Kokiu) [个旧*Gejiu*] in Yunnan Province, which was served by the 600mm gauge "Kopei" Railway [*Gebi* 个碧铁路]. 16 photos.
The Kwantung Tramway Co. Ilustrated description of Kwantung trams. Included because it has one photo of a bus and with trailer outside Canton's Tashatao railway station, the terminus of the Canton-Kowloon Line.
Baldwin Locomotives Full-page advertisement.

October 1922
Advertisement for the Drewry Car Co. of UK
Advertisement for McClintlc-Marshall manufacturer of steel railway bridges for the S.M.R.
Menace to Travel in Manchuria A report about a spate of deliberate train wrecking on the South Manchuria Railway. Several fatal accidents had been caused by intereference with the track.
Liuchang Coal Mines Illustrated description of the 30-inch narrow gauge railway line from coal mines to the port at Chinwangtao. 6 photos.
Proposed Bridges Across the Yangtze and Han Rivers A detailed report about Dr. J.A.L. Waddell's proposals for bridging the rivers. 4 sketches and estimates of construction costs.
Shantung Railway Full page advertisement.

November 1922
Advertisement for the Drewry Car Co. of UK
S.M.R. Development Schemes for 1922-1923 The company had set aside over Yen 30m. for improvements.
Japanese Locomotives for Chinese Railways The Shantung and S.M.R railways had placed orders for two types of locomotive from the Osaka Works of Kisha Seizo Kaisha. 2 sketches.

December 1922
New Kailan Building at Tientsin 2 photos.
Tienposhan-Tumen Light Railway This proposed light railway across the Tumen River to serve silver mines was being pushed despite local opposition about this being a sell-out to the Japanese.
Report Upon a Project for Bridging the Yangtze River Between Cities of Nanking and Pukow A further report on this proposal by engineer Dr. Waddell.
A Hydraulic Pile for Use on the Yellow River Bridge and for Other Foundations in China Details of a method of piling recommended by Waddell.
Motor Coaches on the Canton to Kowloon Railway Description with 5 photographs of the two Hall-Scott Motor coached delived to the KCR (British Section) in 1922

The Far Eastern Review



AUTOMOTIVE NUMBER

JANUARY 1922

ARTICLE CHIEN

SOUTH MANCHURIA RAILWAY

MANCHURIA AND CHOSEN LINES

Circular and Overland Trips at Greatly Reduced Rates

TOURIST TRAVEL OFF THE BEATEN TRACK

Tourists in the Far East should not miss Manchuria. Through Japan, Chosen (Korea), and Manchuria (or vice versâ) is an ideal trip, combining the distinctive characteristics of three unique and profoundly interesting countries.

THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul and Dairen and Changchun), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least twice a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

SOUTH MANCHURIA RAILWAY COMPANY

Head Office: DAIREN

Branch Offices: TOKYO, SEOUL, HARBIN, KIRIN, PEKING, SHANGHAI AND NEW YORK.

Telegraphic Address: MANTETSU or SMRCO. Codes: A.B.C. 5th & 6th Editions, A1 Lieber's, and Bentley's

BALDWIN

Thirty Locomotives Built For China In Record Time

BUILT FOR THE PEKING-HANKOW RAILWAY, CHINA

Gauge, 4'8½". Cylinders, 20" by 26". Working pressure, 170 pounds. Driving Wheels, diameter, 59". Total weight, 155,000 pounds. Total weight, engine and tender, 247,500 pounds. Tractive force at 85% of working pressure, 25,500 pounds. Fuel, coal. Service, Passenger and Freight.

ON March 30, 1921, the Peking-Hankow Railway ordered thirty Prairie (2-6-2) type locomotives, similar to ten built and delivered by these Works in 1919.

The contract called for quick deliveries. Fifteen were to be finished in five and one-half months and the remaining fifteen one month later.

With our very complete facilities for purchasing the raw materials and fabricating all the parts, we were able to ship the 30 locomotives from our own docks on June 11. They were delivered at Hankow, September 4—JUST 5 MONTHS AND 5 DAYS AFTER RECEIPT OF ORDER.

Baldwin Service is World-wide, and is at the command of all the railways

THE BALDWIN LOCOMOTIVE WORKS

PHILADELPHIA, U.S.A.

Cable Address: "Baldwin, Philadelphia"

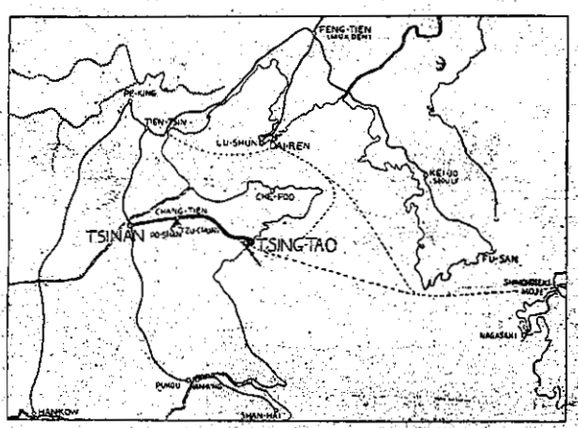
SALE & FRAZAR, LTD., Tokyo and New York
J. O. FEENSTRA, Bandoeng, Java, D. E. I.
C. BREWER & CO., LTD., Hawaii
NEWELL & CO., Melbourne, Victoria
ANDERSEN, MEYER & CO., LTD., Shanghai and New York
PHILLIPS & PIKE, Wellington, New Zealand
R. TOWNS & CO., Sydney, New South Wales
LESLIE & CO., Perth, Western Australia
PACIFIC COMMERCIAL CO., Manila, P. I., and New York

632

LOCOMOTIVES

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.30 p.m.
Train No. 3 leaves Tsingtao daily 9.30 p.m. arrives Tsinan 8.30 a.m.
Train No. 2 leaves Tsinan daily 8.00 a.m. arrives Tsingtao 6.30 p.m.
Train No. 4 leaves Tsinan daily 11.00 p.m. arrives Tsingtao 9.30 a.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car, in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.

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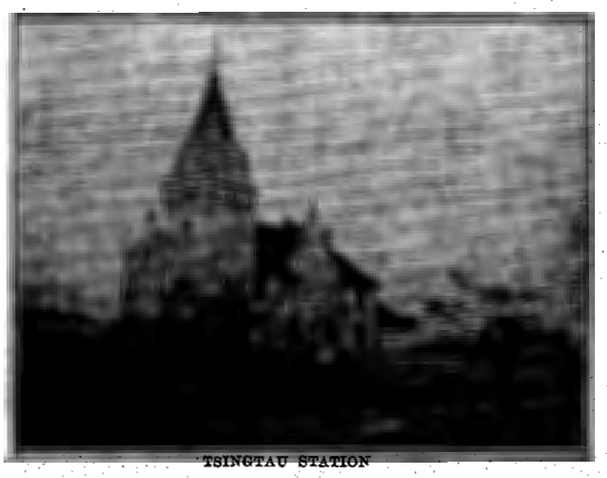

TSINGTAU STATION

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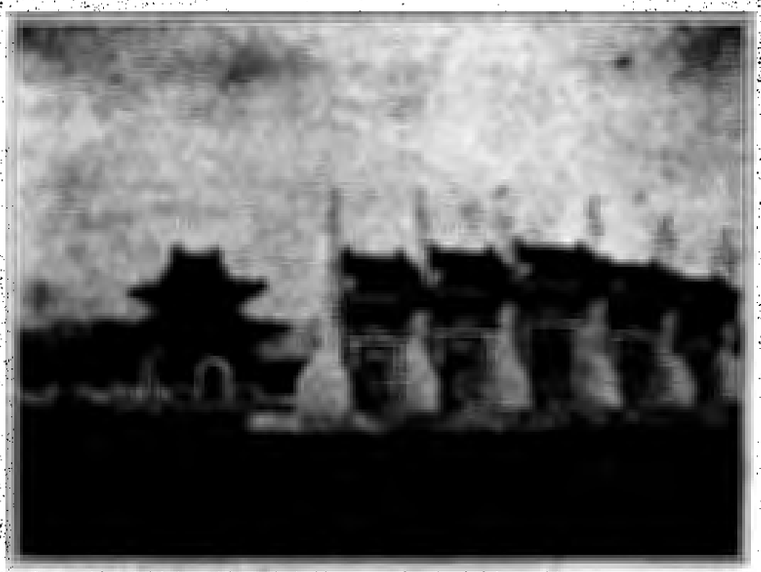
THE SHANTUNG RAILWAY ADMINISTRATION, TSINGTAO

CABLE ADDRESS: "SANTETSU" CODES: A.B.C. 5TH ED. & AI.

CHINESE GOVERNMENT RAILWAYS

SUMMER RESORT AT CHI KUNG SHAN



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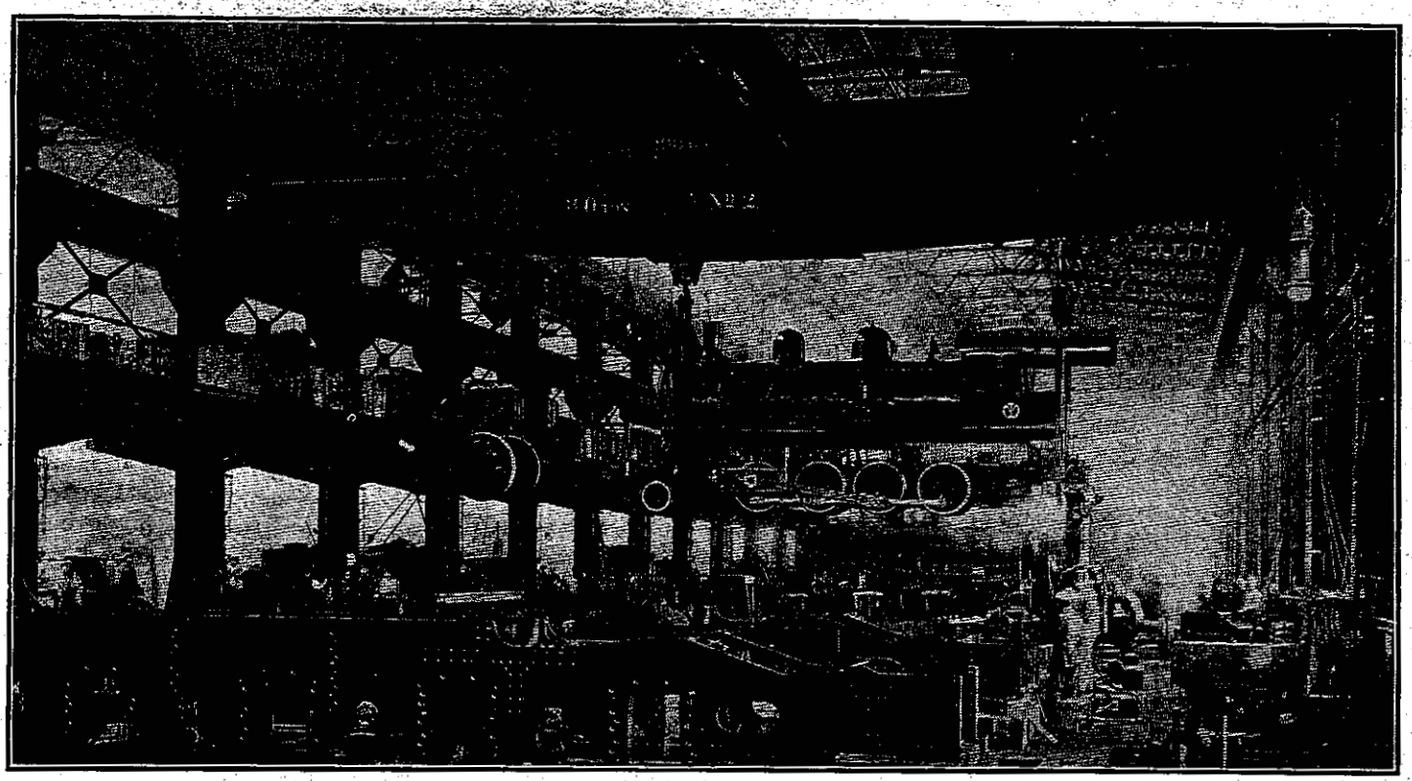
Telegraphic Address: "KINCO" **Codes: A.B.C. 5th Edition** **Telephone East 1698**

SOUTH MANCHURIA RAILWAY

RAILWAY

SHAKAKO WORKSHOPS



Interior of Engine Erecting Shop, Shakako Shops, S.M.R.

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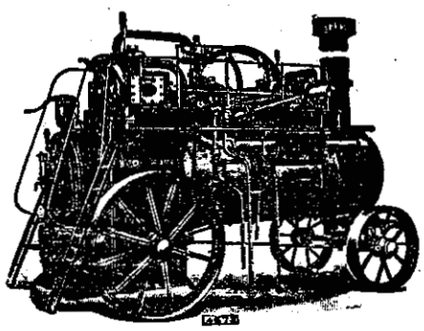

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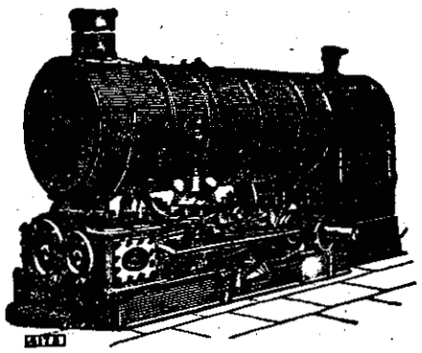

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No. 1	... ...	400′ × 27′
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Iron Building	... ...	8,871.57
Concrete Building	... ...	1,636.99
Brick Building	... ...	2,011.72
Others	... ...	5,807.74

Directors: TOSHINOBU SUDA, Esq. *(Chairman)*, MANKICHI MIYANAGA, Esq. *(Managing Business Dept.)*, TAMATARO TOJO, Esq. *(Managing Shop Dept.)*

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Prairie Type Locomotives for the Peking-Hankow Railway

DURING 1921, in keeping with the progressive policy of the Chinese government railways orders have been placed for more than 120 locomotives. This number is probably equal to, or more than, the number that had been purchased in any two previous years in China's history. Of this number the Kin Han Railway will receive 60 prairie type locomotives, 30 of which were ordered direct from The Baldwin Locomotive Works, the balance from the Societe Belge pour l'Exportation Industrielle through the Chinese banking group.

The prairie type of locomotive (2-6-2) was first evolved in the United States for use by the Chicago Burlington & Quincy railroad in 1900 and was used for hauling live-stock quickly across the great prairies in the western part of the country. It has a two-wheel front truck, six coupled driving wheels and a two-wheel trailing truck and is a natural development from the Mogul (2-6-0) type.

In 1919 the Kin Han Railway ordered 30 locomotives of this type, 10 of which were built by The Baldwin Locomotive Works. The locomotives were built in accordance with preliminary designs and specifications furnished by the railway with certain modifications which conform to American practice. A number of rather difficult problems were successfully met by the manufacturer in building these locomotives, including close limitations of weight and very rigid requirements as regards the counter-balancing of reciprocating parts.

The limitations of weight made it necessary to design all parts as light as possible, consistent with the desired strength and, to conform to the railway's specification, only about 46 per cent. of the reciprocating weights were balanced in the driving wheels, in order to keep the dynamic augment or increase in rail pressure, down to 15 per cent. of the static load at 60 kilometres per hour.

On March 30th, 1921, the Kin Han Railway ordered 30 more prairie type locomotives from the Baldwin Locomotive Works. The terms of the contract stipulated that 15 of the locomotives were to be delivered in China in 5½ months and the balance in 6½ months after the signing of the contract. These locomotives were completed and the entire 30 shipped from America on June 11th, 1921, arrived in China and were on the railway wharf near Hankow on September 4th, just five months and five days after the contract was signed, and on November 4th the entire 30 had been re-erected at the railway's shops at Kilometre 10, near Hankow.

A rather unique feature of these 30 locomotives is that they are equipped with copper firebox and combustion chamber. It is believed that these are the first locomotives so equipped, but we would be pleased to hear from our readers on this point if it appears to be incorrect.

Other features of the locomotives include American type bar frames, superheaters, Walschaerts valve gear, Westinghouse air brakes and steam heat Nathan simplex injectors, Nathan five-feed lubricators, Coale safety valves, 18-in. round case headlights fitted with Pyle national incandescent electric equipment, Janney M.C.B. automatic couplers and Haessler speed recorders.

The specifications for the locomotives which are being used equally well for passenger or freight service are as follows:

Gauge	4′ 8½″
Cylinders	20″ x 26″
Valves	Piston 10″ dia.

Boiler

Type	Conical
Diameter	60″
Thickness of barrel sheets	9/16″ & 5/8″
Working pressure	170-lbs.
Fuel	Semi-Bitum. coal

Firebox

Material	Copper
Staying	Radial
Length	83⅞″
Width	54″
Depth, front	67½″
Depth, back	54″

Water Space

Front	4″
Sides	3″
Back	3½″

Tubes

Diameter 5⅜″	2″
Material, Steel	Steel
Thickness No. 9 W.G.	No. 12 W.G.
Number 21	130
Length 14′ 7½″	14′ 7½″

Heating Surface

Firebox	127 sq. ft.
Combustion chamber	56 sq. ft.
Tubes	990 sq. ft.
Flues	430 sq. ft.
Fire brick tubes	15 sq. ft.
Total	1,618 sq. ft.
Superheater	371 sq. ft.
Grate area	31.5 sq. ft.

Driving Wheels

Diameter, outside	59″
Diameter, centre	53½″
Journals, main	8½″ x 11″
Journals, others	8½″ x 11″

Engine Truck Wheels

Diameter, front	33½″
Journals	6″ x 12″
Diameter, back	39⅜″
Journals	7″ x 12″

Wheel Base

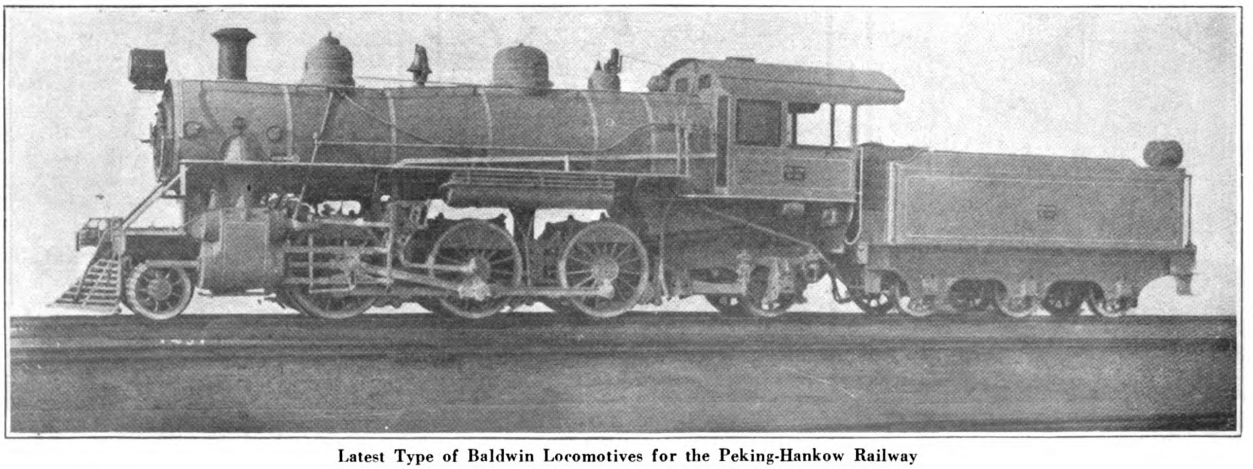
Driving	13′ 10″
Rigid	13′ 10″
Total engine	31′ 7″
Total engine and tender	53′ 10¼″

Weight

On driving wheels	99,000-lbs.
On truck, front	25,000 ,,
On truck, back	31,000 ,,
Total engine	155,000 ,,
Total engine and tender	247,500 ,,

Tender

Wheels, number	6″
Wheels, diameter	39⅜″
Journals	5.11″ x 10.23″
Tank capacity	4,800 U.S. gals.
Fuel	7 tons
Tractive force at 85% of working pressure	25,500-lbs.
Service	Passenger and Freight.



Latest Type of Baldwin Locomotives for the Peking-Hankow Railway

大正七年七月十日第三種郵便物認可

THE FAR EASTERN REVIEW

FINANCE ENGINEERING COMMERCE

上海仁記路第五號

遠東時報

TOKYO'S PROJECTED SUBWAY

NORTH CHINA COTTON INDUSTRY

THE NEW CANTON

ASIATIC STEEL WORKS

FIJI ISLANDS SUGAR

AUTOMOTIVE SUPPLEMENT

AIRCRAFT IN 1921

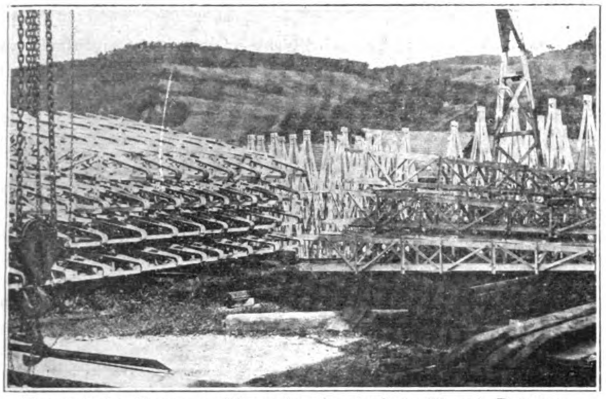
TRANSPORTATION IN CHINA

THE FUTURE OF THE MOTOR LORRY

Vol. XVIII MARCH, 1922 No. 3

PARTICLE CHIERI

firm has invented a rapid copper plating bath (which permits a deposition of about 40 gr. of copper per hour). However such cases are exceptional, for copper is the most suitable metal in the electroplating industry, whilst in the case of other metals all the most ingenious devices have not advanced far beyond the above



Transmission Towers and Spreaders for the Swiss Electric Railways Galvanized by the Schoop Process to Prevent Rusting

mentioned limited means. Further a deposit of even 40 gr. of metal per hour per sq. decimeter cannot be compared with the operation of the spraying process, which can deposit this quantity in a fraction of a minute, the deposition taking place with the same precision and the same close adherence of the metal to the smallest hollows and irregularities as is the case with electric deposition.

Metallic surfaces only need cleaning with a sand blast before spraying, and objects which do not conduct electricity do not require to be first rendered conductive since the sprayed coating can be produced on any material. In addition to this, the process offers the great advantage that it permits us to work the one metal which the art of electric deposition has up till now been unable in spite of all efforts to utilize : aluminium.

The possibilities of applications of the process for industrial purpose are, of course, quite unlimited, especially since the temperature of the metal spray is very low, so that not only combustible materials, such as wood and paper, but also substances which are actually highly inflammable, such as celluloid, and even explosives, can be directly sprayed. The-coating of fabrics with metal for airships, thus rendering them more gas tight whilst not appreciably increasing their weight by the thin metallic coating (which may be of aluminium), may provee of just as much importance as the coating of wooden frames and fabrics of aeroplanes for their protection against the weather and for increasing their stability. As a matter of fact, the coating of wood with metal is in itself virgin soil, and has many possibilities which are obvious. For example, the coating of ship bottoms and other ship parts and of telegraph poles and masts for protection against weather and insects.

The Inventor: Shoop

Packing cases, etc., can easily be strengthened by spraying the edges of the boxes for oversea transport. The task of soldering up a box containing dynamite must be a very unpleasant one, but it can be affected without danger by spraying process.

After what has been said it is unnecessary to reiterate the advantages which the applications of the spraying process offer in connection with artistic industrial works, for instance, coating wood, plaster, leather or celluloid objects wholly or partially with metal, or for producing patterns on surfaces by means of stencils. With regard to the taking of impressions of parts to the body, it may be mentioned that in Paris a successful attempt has been made to obtain finger-prints of criminals by the spraying process. Finally, in connection with this group of removable coatings, there is one branch in which the spraying processes are of the greatest importance, namely, the manufacture of casting and blocks. The spraying processes offer a most valuable substitue for all these methods since they are equal to them in accuracy and are superior to them in rapidity. For instance, it is possible to prepare in one hour from one single negative block as many as thirty finished blocks which are equal in every respect to electro-types. It is also possible to make blocks of iron and even of steel ; formerly these could only be produced by means of highly complicated engraving processes on a steel plate.

In all probability the Schoop spraying processes will constitute a great advance in not a few branches of technical industry and amongst these branches are some for which it will create an entirely new history.

Railway Construction in China and Japan

JAPAN ORDERS RAILS.—An order for 13,000 tons of rails has been given an American corporation by the railway department. Although different according to year, the annual consumption of rails by the government railways is 55,000 tons on average, of which the larger portion is supplied by the government Iron Works, whose yearly capacity is about 40,000 tons of rails minus supplies to private railways. The railway department found, however, the limited supply by the iron works inadequate for its needs this fiscal year, which have been increased somewhat over usual requirements. This compelled it to give the above order to the American firm on December 26, including 60 and 75-lbs. rails for arrival at Otaru, Yokohama and Kobe until March 31. The contract prices are kept sceret, but are conjectured by some to be in the neighborhood of Y.110 per ton, which is Y.10 or 15 lower than the Japanese products, which are stated, further, to be inferior in quality.

LIGHT RAILWAY, ANHWEI.—The Woo Shun Coal Mining Company at Pei-lee-ching in Shih-hsien, Anhwei, will build a light railway from the mines to Ma-dao-ching, a distance of 25 *li*.

CHUKIANG-HSIENTU RAILWAY, HUPEH.—The building of a railway from Chu-kiang to Hsientu, western Hupeh, is projected by the local gentry to develop the rich mines in these districts.

BRIDGES OVER YANGTZE RIVER.—Dr. Waddell has recommended to the Peking government the construction of three large bridges at an estimated cost of $70,000.000 :—(1) The Han-kiang bridge over the Han-kiang connecting Hankow with Hanyang; (2) the Yangtze bridge over the Yangtze River connecting Wuchang with Hankow; (3) the Yangtze bridge over the Yangtze River connecting Nanking with Pukow.

大正七年七月十日第三種郵便物認可

PERICLE CHIERI

Hong Kong University page 209

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

HUGE ELECTRICAL EXPANSION IN JAPAN

JAPANESE ELECTRIC RAILWAYS

UNIVERSITY OF HONGKONG

SUPERSTRUCTURE OF N.E.I. RAILWAYS

RUSSIAN TIMBER TRADE

SULU ARCHIPELAGO

上海仁記路第五號

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Vol. XVIII APRIL, 1922 No. 4

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A.L.TAYLER.

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The Cheapest and Best Coal Mined in the Far East

Annual Output: 600,000 tons.

The Coal is washed, screened, and classified for the market into five grades, viz., Lump, Slack, and Washed Coal Nos. 1, 2 and 3.

Tzuchuan Coal contains a large amount of coke, with only a small amount of ash, and has a heating capacity of 7,500 calories.

Tzuchuan Coal, which rivals the best Cardiff Coal, is highly recommended for Coke and Briquette manufacture, for Boiler and Marine use and for General Domestic use.

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THE CHOSEN AND MANCHURIA LINES are under the management of the South Manchuria Railway Company. Express trains have been temporarily suspended (except between Fusan and Seoul and Dairen and Changchun), but the **ORDINARY TRAINS ARE EQUAL TO MOST AMERICAN TRAINS,** run at least twice a day from each end, and to some of them Sleeping and Dining Cars are attached. Sleeping berths should be reserved in advance.

HOTELS under the Company's management are established **ON FOREIGN LINES** at **SEOUL** (capital of Chosen), **FUSAN** and **SHINGISHU** (the two extremities of Chosen), **KONGOSAN** (the famous Diamond Mountain of Korea, rivalling Switzerland in scenery), **MUKDEN** (ancient capital of China, home of the Manchuria Dynasty, noted for Imperial Palaces and Tombs), **CHANGCHUN** (junction for three railways and "key to Manchuria"), **PORT ARTHUR** (of world-wide fame for its historic sieges and ruined forts), **DAIREN** (one of the greatest commercial cities in the Orient), and **HOSHIGAURA** (the finest seaside resort in North China).

FROM DAIREN there are **FREQUENT AND REGULAR STEAMERS** to and from Shanghai, Tsingtao, Tientsin, etc.

For pictorial guide-books, pamphlets, and further particulars, apply to the Tourist and Ticket Agencies, or direct to the

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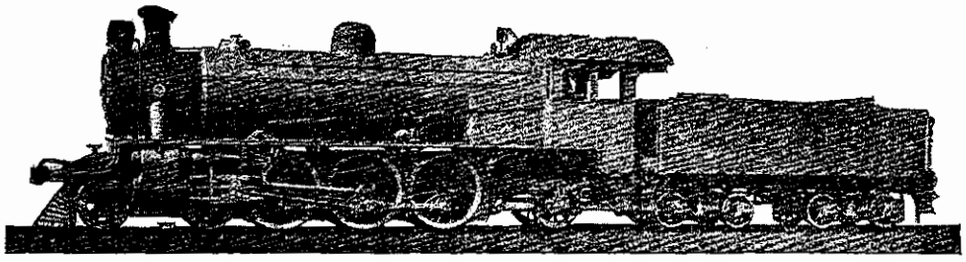
BALDWIN

Peking-Mukden Railway Orders additional Baldwin Pacific Type Locomotives after severe operating tests



Gauge, 4' 8½". Cylinders, 20" by 26". Working pressure, 180 pounds. Fuel, Coal. Driving wheels, diameter, 66". Weight, engine, 175,200 pounds. Total weight, engine and tender, 296,000 pounds. Service, Passenger

IN the early part of 1920, five Baldwin Pacifics were placed in service on the Peking-Mukden Railway—one of China's most important lines. They proved so successful in operation that five additional locomotives of the same type were ordered from us in 1921.

The design for these Baldwin Pacifics included all American standards in conjunction with plate-frames, and a number of European specialties.

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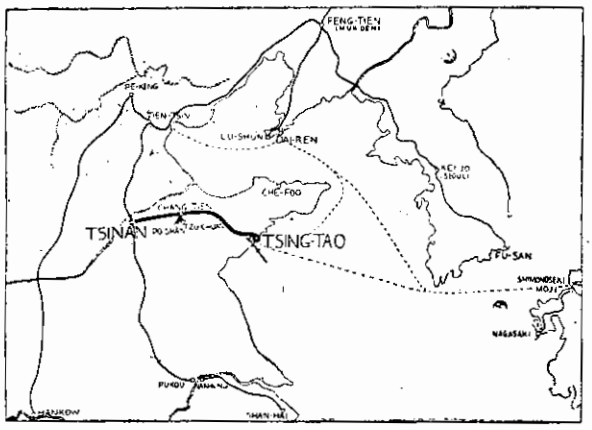
LOCOMOTIVES

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Posban, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed hy the Mining Department of the Shantung Railway.
At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 10.00 p.m. arrives Tsinan 8.00 a.m.
Train No. 3 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.40 p.m.
Train No. 2 leaves Tsinan daily 11.00 p.m. arrives Tsingtao 8.35 a.m.
Train No. 4 leaves Tsinan daily 10.10 a.m. arrives Tsingtao 8.20 p.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Posban and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.

BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, hits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

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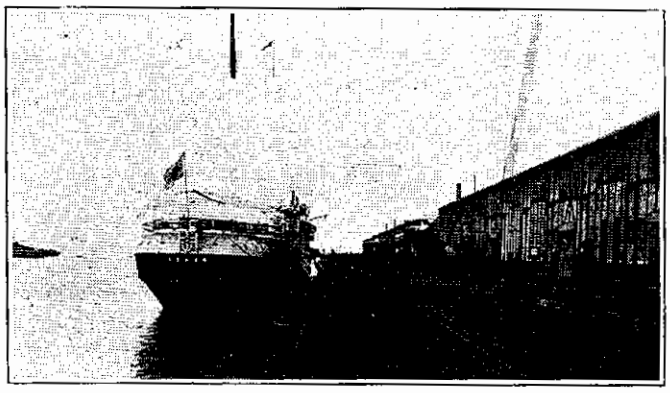
The hotels are luxuriously furnished with up-to-date eqnipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



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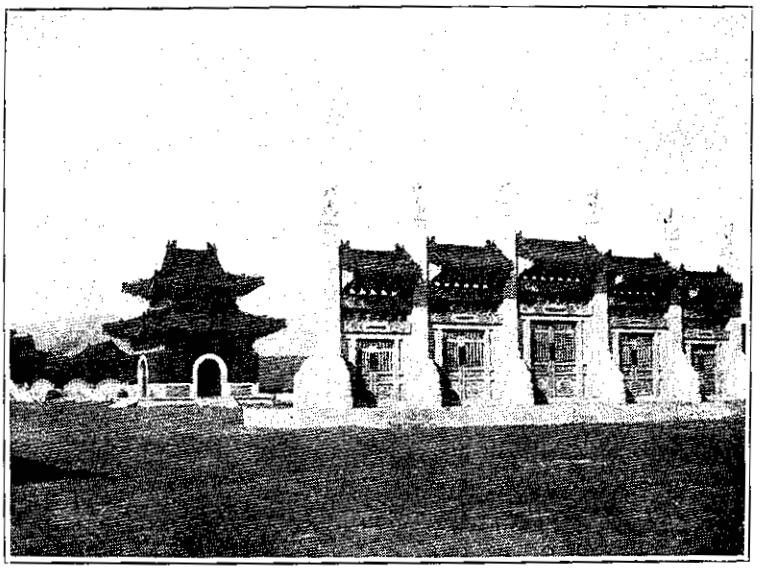

AT THE CHUNG LING TOMBS

PEKING-HANKOW LINE

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The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, hy means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

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Chikungsban Mountain (Summer Resort).—Not many Summer Resorts in China inland, can bear comparison with the natural charming views, that reward those who ascend the mountain of Chikungshan, whose summit stands at an altitude of 1,980 ft. On reaching Sintien station, situated 110 miles from Hankow, a serpentine road climbs the mountain, on top of which are bundreds of beautiful bungalows awaiting vacationists. This popular resort is celebrated for its scenery, where an almost unbroken communion with nature can be enjoyed for a week at a time.

Hsi-ling or Western Imperial Tombs.—With their present-day accessibility, there is now little excuse for visitors to Peking omitting a trip to the Western Imperial Tombs, undoubtedly one of the most impressive sights in China. The site of these beautifully adorned Imperial Tombs is close to Liang Ko Chwang station, 79 miles from Peking, which is reached by a Branch-line, formerly built for the exclusive use of the Imperial Sovereigns when visiting the Tombs of their ancestors. The Western Tombs include the mausoleums of four Manchu Emperors and three Empresses, as well as those of a number of Princesses. The region, as a well laid-out park, closely wooded, is justly appreciated for the charming scenery surrounding the Imperial Tombs and is highly recommended to any one in search of the extraordinary and beautiful.

For Particulars, Pamphlets, Reservations, Tickets, etc., apply to the "Information Bureau" at Peking Head Office or to Tourist Agencies.

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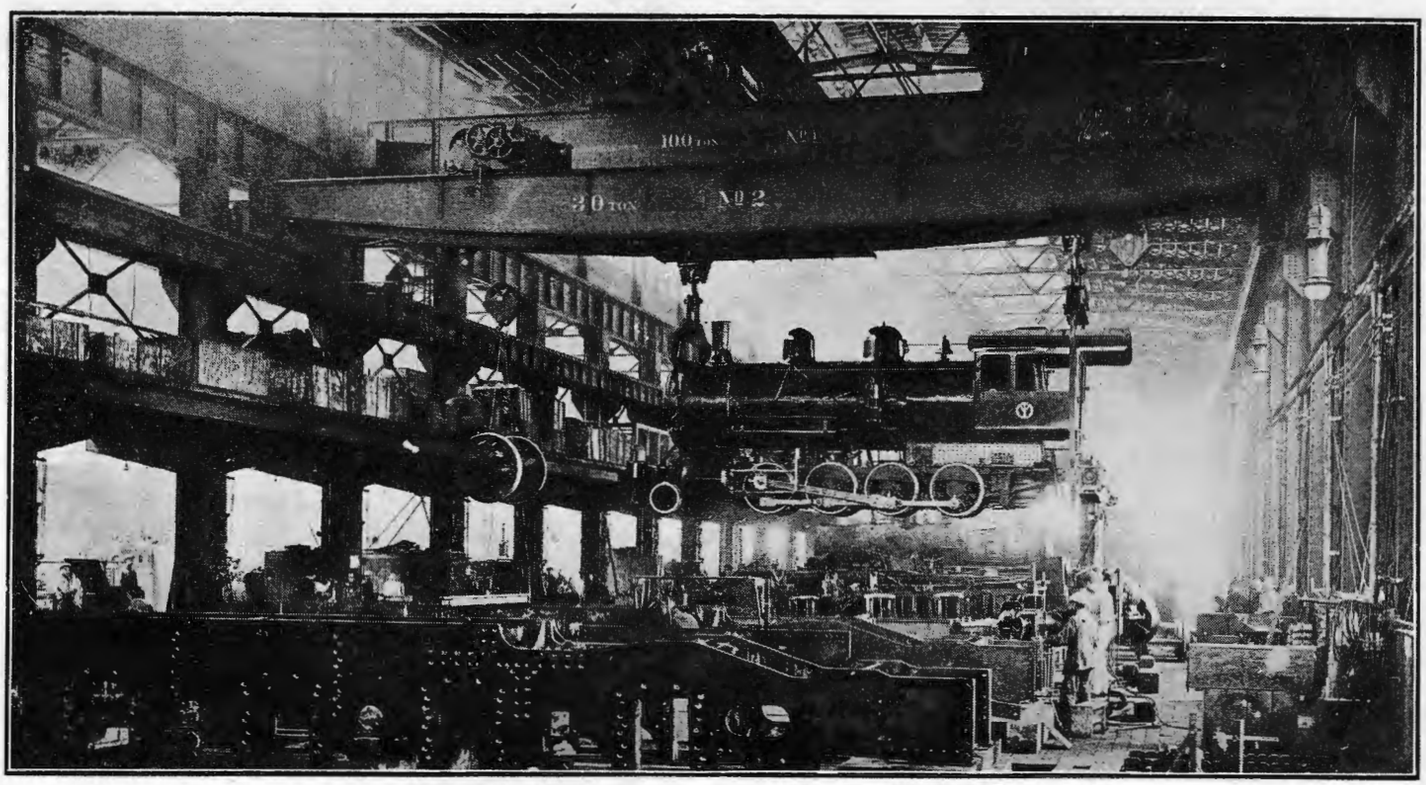

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S.S. "Loong-Mow" pages 311-312. — The Hydro-Electric in China pp. 315-317 (incl.

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THE FAR EASTERN REVIEW

FINANCE ENGINEERING COMMERCE

THE CONSORTIUM

JAPAN'S WATER POWERS

RIVER CONSERVANCY

JAVA SUGAR INDUSTRY

PHILIPPINE COAL SUPPLY

EGG PRODUCTS IN CHINA

Vol. XVIII | MAY, 1922 | No. 5

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遠東時報

A.L. TAYLER.

The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XVIII SHANGHAI, MAY, 1922 No. 5

THE CONSORTIUM

An Analysis of its Usefulness

IT is now three years since the first meeting of the consortium was held in Paris, and as yet it can hardly be said that any practical results have come out of this new alignment of international finance other than establishing a policy of international co-operation to supersede international competition, and a tightening of the international money market against indiscriminate and reckless borrowing on the part of China. Much water has passed under the mill since the consortium was organized. The results of the Washington conference have deprived it of political significance, superseding the agreements arrived at between the bankers by more effective understandings ratified into international law for a period of ten years. The consortium stands to-day as a purely business proposition supported by its various governments for the sole purpose of eliminating a competition that would be taken advantage of by unscrupulous Chinese officials and financial adventurers to plunge the country deeper into the mire of insolvency. On another page of this number of THE FAR EASTERN REVIEW will be found the speech of Sir Charles Addis on the work of the consortium together with his conclusions that if it should fail to function, its dissolution would revive the spheres of influence with the intensification of international rivalries and jealousies which marked the period of 1898-99, knowh as the "Battle of Concessions." If we admit that the treaties arising out of the Washington conference are to have any binding force, it is difficult to subscribe to these conclusions. With the recognition of China's full sovereignty, the spheres of influence have been abandoned and cannot be readily revived, whether the consortium functions or not.

In presenting arguments in favor of the consortium, Sir Charles has unnecessarily emphasized a possibility, that in the very nature of things, has vanished from the Far Eastern political stage. The one tie binding the international banking groups together at this time must be one of mutual assistance in financing China, in order to eliminate wild-cat loans and so prevent complete financial chaos, intervention, and international control of Chinese revenues for the service of past loans.

Sir Charles also advocates the practicability of negotiating with an autonomous or group of autonomous provinces for the construction of specific railway undertakings within their respective borders, and in doing so reverts to the plan proposed by the writer as the basis of Sun Yat-sen's national railway corporation in 1912. In the January, 1915, number of THE FAR EASTERN REVIEW, under the title of "The Status of the Chinese National Railway Corporation," the plan of financing Chinese railways through loans secured on provincial revenues guaranteed by the central government, was fully outlined. At that time, at the very inception of the republic, it was assumed that the new order would embrace a recognition of provincial rights in railway construction, and, that owing to the inability of the central government to allocate specific revenues for the security of such loans, the financiers could fall back on provincial revenues, with the added guaranty of the general revenues and good faith of the central government. It was assumed that the republican government would be organized on a basis of municipal and provincial autonomy with jurisdiction over public works and improvements within their boundaries, and that railway work could proceed without reference to the Peking government, except wherever such lines became inter-provincial, when control over rates and traffic would come under the central authority. Such a plan, harmonizing with the political tendency of the times, was, however, after most careful study, rejected by Dr. Sun Yat-sen and his advisers as involving insuperable difficulties arising out of independent negotiations with the various provincial authorities. Dr. Sun knew China and the limitations of his so-called republican governors and provincial parliaments, and realized that their ideas of autonomous rule had not reached that stage of enlightenment where such negotiations could be carried on successfully without resorting to bribery in its most obnoxious forms. Here, then, at the very outset of the new republic, its founders clearly recognized that railway negotiations, to be successful, would have to be centralized under some responsible bureau representing the federal government. At that period, there was some reason to hope that a constitutional central or federal government based on provincial autonomy would emerge from the uncertainty then prevailing. Ten years have passed. Chaos reigns in all the provinces. They are autonomous to the extent that they are dominated by military chieftains who acknowledge no allegiance to any central authority. To negotiate with any one of them separately in the matter of railways within their jurisdiction, would not only inaugurate a new era of unbridled graft, but make difficult re-establishment of the central authority.

Aside, however, from this aspect of the railway problem, the consortium faces a more delicate and serious political question in placing such a plan into operation. The groups composing the consortium cannot dissociate themselves from their respective foreign offices. The present consortium is the instrument of their governments, called into being at the special invitation of the American government, and hammered into an effective organization, through determined diplomatic support. The consortium is, therefore, political in every sense of the word, as much a part of the diplomatic machinery of the four powers whose support permits it to exist, as the embassies and legations through whom all matters are referred to the home authorities.

If the consortium, at this juncture, should initiate direct negotiations with any of the so-called autonomous provincial governments for the construction of railways, would not this constitute a formal recognition of such governments? Can the consortium initiate negotiations with Canton without conferring on that government some sort of official recognition of its status? As with Canton, so with any other of the independent or semi-independent *tuchuns*. Official recognition on the part of the foreign governments to Canton or any other so-called autonomous provincial government through their financial instrument, the consortium, would, under existing circumstances, tend to further complicate the situation, as all such negotiations must, in the end, receive the sanction of some recognized central government in order to safeguard the bondholders.

It is not difficult to sense that in advancing this argument Sir Charles had in mind the immediate resumption of work on the Canton-Hankow line, which, pending unification of the north and south, must involve negotiations with the Canton government. The Hukwang agreement covering the financing and construction of this important trunk line, provides only for the section between Wuchang and the Kwangtung border. For the line to be profitable and operated successfully, the Chinese section from the Kwangtung border to Canton (known as the Kwangtung Yueh-Han railway), would have to be taken over by the central government and brought under the consortium agreement. Here, we have a typical case of the difficulties surrounding railway finance in China. That portion of the Canton-Hankow line embraced in the Hukwang agreement and now pooled in the new consortium, must depend upon the privately controlled Chinese section in Kwangtung to reach a deep-water terminus at Canton or Hongkong, and, unless the latter be absorbed so that the entire railway can come under one management, the main section will always be at the mercy of the other. Any negotiations for a new loan to proceed with the uncompleted sections in Hunan embraced in the Hukwang agreement, must of a necessity, cover the taking over of the Chinese controlled Yueh-Han line, and here, pending unification of the country, the consortium must perforce deal with the Canton government.

This, undoubtedly, is what Sir Charles had in mind in advocating the opening of negotiations with autonomous or a group of autonomous provincial governments. In this instance, there is some force to the argument, as under any circumstances, the Yueh-Han line stands as a provincial property, independent of the ministry of communications at Peking, and if any agreement can be reached with the provincial company that would permit the consortium to take over the property and complete the section between Yintak and the Hunan border, it would assure the successful and profitable operation of the through trunk line whenever it is completed. It means, in effect, purchasing the property from the provincial company and holding it in trust for the Chinese people until such time as it can be incorporated in a larger loan with a stable central government for the completion of the other sections. While perhaps not involving recognition of the southern republic, it does emphatically involve recognition of the Kwangtung provincial government, a most essential part of the southern republic. Recognition of one would seem to imply recognition of the other, though perhaps international lawyers might find some precedent for negotiating with the autonomous province without compromising the consortium into recognizing the southern republic.

The arguments advanced by Sir Charles, indicate that the consortium is having a difficult time in breaking through the many obstacles that lie in the path of its success. As the head of the British group, Sir Charles is naturally interested in any plan that will hasten the completion of the Canton-Hankow line, while the other groups are equally interested in seeing some of their own pet projects realized. Although working in complete harmony, the various groups in the consortium have their own ideas of what work is most important to be carried out without delay. The American group has a natural preference towards starting work on the Hankow-Szechuan line and the Grand Canal, while the Japanese would like to see the extensions of the Shantung line taken up as soon as possible. Here, we strike other snags in the smooth working of the consortium, as we find that the two lines in Shantung surrendered to the consortium by the Japanese group are handicapped at the outset by a loan of $20,000,000 advanced by Japanese bankers to the Peking government on the security of these lines. These funds were dissipated by the Peking government in internal warfare, so the lines must now be saddled with this extra cost at the outset of any final negotiations, thus diminishing legitimate returns from the larger investment necessary to build them. If the main Shantung line had been handed over to the consortium instead of being returned to the Chinese government, these extensions could have formed part of the main system and the extra financial load of $20,000,000 more evenly distributed. Forming part of the Shantung Railway, under one management, the loan for building the two extensions would have materially increased the capitalization of the main line, without any undue strain on the earning capacity of the system. In this question, the Japanese lost a most valuable point at Washington, and at the same time, made the task of the consortium more difficult. As it is, the Chinese get possession of the main line of the system, while the important branches pooled in the consortium must stand on their own bottom and carry the interest load of a $20,000,000 advance, in addition to their actual cost of construction. Under these conditions, the financing of these extensions under the consortium may encounter difficulties, not only in negotiating a final contract with the Chinese government but in issuing the bonds afterwards. Much will depend upon the terms China is willing to agree to, and the extra burden may call for special terms if the lines are ever constructed.

On the other hand, Americans, especially the American International Corporation holding the Siems-Carey contracts, are interested in pushing through the Hankow-Szechuan line and starting work on the Grand Canal. These contracts stand on their own bottom, with such terms as should permit the loans to be raised at any time the bond market is favorable. On all the old railway contracts pooled in the consortium, the loan terms and conditions must be revised in order to enable the floating of a new issue. Here, sooner or later, the consortium must come to the Chinese and open negotiations. The terms of the Siems-Carey contracts, however, with their twenty per cent. participation in the profits of operation, eight or ten per cent. construction profits, five points commission to the bankers, and five per cent. on the purchase of materials, with chief engineer, auditor and traffic manager to assure the proper expenditure of the loan funds and direction of operation, should be ample enough to assure the success of a loan with which to proceed with construction. The same pertains to the financing of the Grand Canal. The Japanese partners in that scheme are favorably disposed towards raising their share of any loan for immediate resumption of work, but the New York market appears to fight shy of Chinese bonds.

Even in the matter of the Hankow-Szechuan lines, a clash of interests must arise whenever the time arrives for issuing a loan for its construction. It will be recalled that the original four power consortium (in which the old American group was a partner), holds the Hukwang Railway contract which embraces the line following the Yangtze from Hankow to Chengtu in Szechuan, and that the first section of this line from Ichang to the Szechuan border was designated for the American group to construct. Considerable progress has been made by the American engineers on this section, especially in the matter of surveys, and Mr. Randolph, the American engineer-in-chief, was appointed by the group as its technical representative during the negotiations leading up to the organization of the new consortium. The old consortium, therefore, is very much concerned over its rights to the line into Szechuan, and, whenever the time arrives to seriously consider financing this railway, either the Siems-Carey project or the earlier rights acquired by the four power group will have to be scrapped. One line must go, as the consortium, will hardly care to assume the difficult task of financing two lines into Szechuan at once. The American section embraced in the Hukwang agreement is the only railway contract the American group has placed in the consortium pot. The British group claim a prior right to construct the railway into Szechuan along the route surveyed by the Siems-Carey Company, thus reinforcing their American partners in the Hukwang agreement. The Hukwang agreement itself would be seriously impaired in value by the elimination of the right to build the Szechuan line, where the French also are to construct a section. In the event the present consortium is ever dissolved, and the pooled contracts revert to their original holders, the Hukwang agreement would be shorn of much of its value if the line into Szechuan is surrendered in favor of the Siems-Carey survey, and at the same time, it would eliminate the old American group from any share in prospective railway building in favor of the American International Corporation.

So, no matter where it turns, the consortium path is beset with enough legitimate financial difficulties to discourage the most optimistic banker. Add to this, the absence of any government in China that can provide the necessary guarantees to a loan contract of any nature, and the situation facing the consortium seems hopeless indeed. In effect, the real value of the consortium at the present moment consists in keeping alive the spirit of international co-operation, and through the support of their respective governments, preventing Chinese officials from floating worthless loans through irresponsible bankers. The greatest danger confronting the consortium and China at this junctûre, is that some independent banker whose prestige in the investment field at home would enable him to dispose of the bonds to the public, may enter into a loan agreement with Chinese officials. Such a loan would effectively kill Chinese credit and make extremely difficult any subsequent effort on the part of the consortium to restore confidence. All the available and surplus revenues of the country are already pledged to the hilt. There is always the danger, however, that some unsophisticated banker may listen to the plausible stories of Chinese loan brokers, and accept without investigation a security that looks good on its face, and issue the bonds to his customers. This has been done before and can be put over again. But at this time, there is no excuse for pleading ignorance of conditions, and any banker that would accept without question the securities so offered, would be guilty of a crime.

If the present situation is left to work itself out, with the interest and principal on past loans being defaulted or postponed, the day cannot be long distant when China will have to face international intervention in the control of her finances, or, appeal to the consortium for help.

Because of the huge profits attached to such loans, the Chinese Bankers' Association may advance sufficient funds for the government to eke out a hand-to-mouth existence. On the other hand, there is no serious indication that they will come to front with the funds required to redeem the Shantung Railway, or do any signs exist that their patriotism will soar to the height of saving the Kiangsi line from falling under Japanese control for defaulting the interest payments. The financial outlook is therefore gloomy, with the consortium alone standing between China and disaster.

Should conditions ever warrant the dissolution of the consortium, the consequences can have little bearing upon China's political status. The Washington conference provides guarantees against territorial aggression for ten years at least, and in that time, the more sanguine friends of China believe that she will be well able to take care of herself. Drop the consortium and the consequences reduce themselves to a simple reversion of the pooled contracts and concessions to their respective holders. With all political and territorial phases of these concessions eliminated as a result of the recent treaties, they must be treated on their merits as business propositions. It goes without saying, that under these conditions, the Chinese government will never submit to being coerced into signing a final agreement for the execution of such concessions, as may have been extracted in the past through severe diplomatic pressure. Under this category would come some of the British and French concessions, as well as the Shantung extensions, originally forced from China by Germany, inherited by Japan and handed over to the consortium. The failure of the consortium therefore would simply deprive its pooled concessions of all commercial value. It is folly to assume at this date, that any government would invite world-wide criticism in supporting these concessions by means other than peaceful diplomatic correspondence.

The real danger from a dissolution of the consortium would arise from a renewal of the jealousies and rivalries incidental upon the opening of the field to independent wild-cat finance. Experience teaches us that the average Chinese official with no knowledge of previous committments, or caring less, if he did know, would unhesitatingly enter into new contracts infringing rights previously bartered away, for the sole purpose of obtaining as much bargain money as possible, or, for the more common Chinese object of creating international friction. Here we have a real menace which must be guarded against in the future. Such tactics on the part of Chinese officials encouraged by irresponsible foreign advisers created the situation that compelled the creation of the present consortium as the only way out of a dangerous tangle. The crude attempt in 1916 to force the United States into a show-down with all the allies on the "open door" doctrine at a time when they were fighting for their existence, ended by effectively closing the Chinese railway field to American capital, and compelling the formation of a new consortium as the only way Americans could enter the field at all. What happened before, can happen again if the field is thrown open to independent and irresponsible exploitation by the failure of the consortium. This is the real danger.

There is one more angle to a possible dissolution of the consortium, that should be of special interest to Americans. Drop the consortium, and under the Washington treaties, the Chinese investment field is automatically opened to all. But will American capital take advantage of this opening? We doubt it. The one feature of the consortium that appeals most strongly to American bankers is the international guarantee that the investments will receive adequate diplomatic support. It is the one strong selling argument that assures public subscription to the bonds. The American bond-holder has learned that he cannot always rely on his government for other than ordinary diplomatic support for the protection of his foreign investments. As a consequence, he is remarkably timid in purchasing the bonds of any country whose interior political conditions are chronically unstable. He knows for a certainty that public opinion will never support his government in employing the persuasive measures of other powers in the event of a default of interest or principal. A long-term American loan to China, at this juncture, without a guarantee of something more tangible than the support of the state department would be most difficult to float in America. The four-power guaranty attached to a consortium loan, however, raises a Chinese bond to the ranks of a gilt-edged security.

It is for these reasons that the success and continuation of the consortium must appeal strongly to Americans. If we admit that public opinion at home will refuse to support the American government in employing force for the collection of repudiated or defaulted foreign securities, long-term loans to China for some years to come, will be possible only through the medium of the consortium, the one safe guaranty to the bondholder that his investment will be protected.

With the disappearance of spheres of influence and all danger of territorial aggression through railway and other concessions eliminated as a result of the Washington conference, and the creation of a board of reference to make the "open door" a practical rather than a theoretical doctrine, there remains another important consideration that must be faced should the consortium be dissolved. With the menace of territorial aggression removed, the Chinese might be willing to grant concessions to foreign capital along lines that have proved so successful in developing other backward countries. Sooner or later, under new political conditions, a stabilized China must effect a radical modification of its ideas on concessions if foreign capital is to develop the resources of the country on terms that will assure profitable returns over a period of years. The concession is only another name for a franchise, which, in various forms, has attracted foreign capital into Latin American countries without in any way impairing their sovereignty. Once China is united under a stable government at Peking or elesewhere, it would seem that the results of the Washington conference will create a loop-hole through which the Chinese may avoid dealing with the consortium by granting concessions for the development of their public utilities, which the governments behind the consortium groups would find most difficult to oppose. In the competition for development loans, China may be compelled to accept the commercial concession granting rights of full ownership and operation over a period of years to foreigners, in order to attract capital. Americans might fight shy of such propositions because of the uncertainties surrounding the internal political situation during the next decade, but would all other nations be

as cautious? The scramble for concessions, should the Chinese adopt such a policy, would tax the powers of a board of reference to maintain the "open door" for all. It goes without saying, that concession terms that might be satisfactory to capitalists of one nation, would be rejected by the more cautious American investor, or, *vice versâ*.

It is also clear that jurisdiction over many of the most profitable public utilities must remain under the municipalities and provinces, absolutely free from interference on the part of the central government, a circumstance that would tend to materially complicate the Chinese investment field, and open up a scramble for concessions in which the most valuable would undoubtedly be snapped up by wild-cat promotors. A "Battle of Concessions," such as markered the period between 1898 and 1900, might well result from this condition, and create intense international rivalries and jealousies, such as are prophecied by Sir Charles Addis, but we fail to see how this would in any way affect the political situation after the very precise understandings arrived at in the Washington treaties. The value of the consortium under such conditions would seem to be in acting as a stopper to the issuance of such loans, through the concerted action of its component banks, correspondents and the brokers forming part of their bond-selling organizations. This means that it would have to constitute itself into a financial monopoly in fact, one that because of the pre-eminent position of its groups in their various countries, would enable it to exert sufficient pressure upon outsiders as to nullify their attempt to issue these independent Chinese loans on their respective markets.

These arguments seem to exhaust the case for the consortium, and we can now turn to a partial analysis of why it has failed to win the confidence of the Chinese, for which there must exist excellent reasons other than those put forward to explain the reluctance of the Chinese to recognize it. The consortium incurred the suspicion of the Chinese from the outset. The Chinese made an honest and earnest effort at Paris to pave the way for the success of the new combination, but were thwarted by the views of state department officials directing the negotiations.

At that time, the writer acted as secretary to the Chinese technical commission headed by Mr. Yeh Kung-cho, then in Paris for the purpose of keeping in touch with the organization of the consortium in order that its work might be facilitated and its plans accepted by the Chinese government who recognized the need of proceeding without delay to the construction of much needed trunk railways. I have refrained from making public the Chinese side of the case, but as many books and magazine articles bearing on the Paris conference have been written by others, I can be excused for throwing additional light on these controversial matters.

As I seek no favors from either the Chinese government or the consortium, I can speak freely without being misunderstood or misinterpreted, my sole object being to throw light on an administration, which, to quote the words of Elihu Root, was "incompetent to originate any policy for itself or carry one out if drafted for it by others." The facts herein disclosed will, at this late date, convey to friends in the Japanese, British and French foreign offices, and group financiers in Tokyo, London and Paris, that I faithfully endeavored to carry out a program for mutual co-operation, which met with their heartiest approval and support, at a time of great international stress.

The task of calling an international convention to straighten out the Far Eastern muddle, which the past administration compromised itself on four different occasions to perform, has devolved upon President Harding, Secretary Hughes, and other far-seeing statesmen. Saved from the possibility of war with Japan, the American people are now looking forward to an era of peace, harmony and co-operation in the Pacific, with China's territorial integrity strengthened and safeguarded by a series of treaties to which all interested powers have subscribed. There is one task, however, started by the last administration which remains unfinished. Wilson, Lansing and Reinsch created the consortium. It is left for Harding, Hughes and Schurman to make it work. Perhaps the information outlined in the following pages, will help clear the way towards a solution to this problem.

G. B. R.

The Background of the Consortium

China's Repeated Efforts to Break Down the Spheres of Influence and Solve her Problems in Her Own Way Thwarted by the Wilson Administration

A PERSONAL NARRATIVE

By George Bronson Rea

IN 1912, Dr. Sun Yat-sen received full powers under a presidential mandate signed by Yuan Shih-kai, to organize a national railway corporation, design a national system of railways and negotiate with foreign bankers for their financing and construction. I was invited by Dr. Sun to accept the position of technical secretary to this corporation, and, after assisting him in designing a practical scheme of 10,000 miles of necessary trunk lines, was commissioned to proceed abroad as deputy director general with full power of attorney to initiate negotiations for its financing, preferably under some international financial combination that would take the railways out of politics and eliminate spheres of interest. On arrival in London, in January 1913, the scheme was presented to Sir Charles Addis, head of the British group in the consortium, whose response was that he would take over and finance every mile of railway Dr. Sun had to offer. He arranged a meeting with the engineers of the British and Chinese corporation at which the details were to be discussed. At that time, owing to the inter-group agreement, in made no difference which of the groups signed the preliminary agreement, as all Chinese business was shared equally. Notwithstanding this, at the solicitation of Mr. Willard Straight, then representing the American group, I decided to give Americans the prestige of signing the preliminary agreement, in order that our own group would have something tangible in the general consortium pot, and assure to American manufacturers a market for railway supplies. Postponing further talks with the British group I sailed for New York, arriving there in the latter part of February, 1913, about ten days before the change in administrations. The American group would do nothing until the policy of President Wilson on these matters was made clear. This he did in no uncertain manner within two weeks after assuming office.

Repeated appeals to support the American group in the construction of necessary railways, in combination with the other groups in the old consortium, proved futile, Secretary Bryan de-

claring that he could not endorse a Wall Street monopoly and recommending that I take the proposition to bankers in Denver, St. Paul, St. Louis, Chicago and other thriving Western cities, who, he declared, would be most anxious to take over any large Chinese loan. The situation was hopeless. With the American group outside the consortium, it became impossible to adhere to the original plan of financing the scheme as a whole with an international group and so eliminate the spheres of interest. Despairing of moving the president or the secretary of state from their position, it became necessary to break the scheme into individual contracts, and again, in order to assure full American participation in the development of China, I proposed to Mr. Straight that the American group take over a preliminary agreement for what was called the South-western Trunk System of over 3,000 miles, at that time free from international complications. No advance payments were asked or required. All the American group had to do, was to sign a preliminary agreement and place it in "cold storage" against such time as conditions would enable it to be financed. Even this was rejected, the bankers declaring they would have absolutely nothing to do with China, until such time as the president modified his attitude and requested them to re-enter the field. This was the last opportunity presented to American capital to participate in China's railway development with contracts absolutely free from international political complications. In his zeal to humble Wall Street and pave the way for his federal reserve system, President Wilson, not only closed the door to American development of Chinese railways, but prevented China from eliminating the spheres of interest in her own way and on her own initiative through international co-operation.

Thoroughly discouraged, I proceeded to Europe and unable to resume negotiations with the British group, split the scheme into individual contracts offering them to various world-known contractors in London and Paris. The Pauling contract for the Canton-Chungking line was arranged for, with four other contracts aggregating 4,000 miles of lines under way on the same terms, when the second revolution broke and Dr. Sun's powers were annulled. Returning to China, and explaining the situation to the government at Peking, I was requested to design another national railway system more in harmony with the ideas of the northern authorities for strategic control of the country. This program was then adopted as the basis of a new scheme for eliminating spheres of influence through international finance. I was appointed technical secretary to the ministry of communications and with Dr. Chen Chintao, as financial commissioner to conduct the detailed negotiations, authorized to proceed to Europe and organize a new international company for the financing, construction and equipment of the new scheme of 10,000 miles. This plan brought into the field the most reputable and experienced firms of railway constructors as principals to the contract. This international construction company was rapidly organized and a meeting held in Paris on April 22, 1914. The bankers, constructors and manufacturers of the United States, France, Britain and Germany participated equally in the organization of the company, which was to be registered in Switzerland. The greatest European financial institutions stood ready to finance the loans, (aggregating $500,000,000) to carry the scheme into effect. Chinese bankers received the right to share in the underwriting, act as depositories of the loan funds, and participate in the construction profits. The terms agreed upon, 13 per cent. on the financing and cost of construction, were two and a half per cent. less than those allowed by the American government for the financing and construction of the Philippine railways. It was for all practical purposes a new construction consortium called into being, by the Chinese government, to finance and construct a limited scheme of 10,000 miles of new railways, in which Chinese banks were permitted to share in the underwriting profits and Chinese capital brought into the construction companies, with an approximate participation of twenty five per cent. in the shares and profits.

The American participant, Messrs. J. G. White & Company, were not represented at the meeting, and it was voted to hold open their quarter-share in the enterprise until such time as they could guarantee the raising of their proportion ($125,000,000) of the loans. The British, French and German constructors had made all necessary arrangements for their groups to finance their obligations before accepting the offer of the Chinese government. In the meantime, the American company approached the state department to ascertain its attitude towards the scheme. The following official letter signed by Mr. Robert Lansing speaks for itself :—

DEPARTMENT OF STATE WASHINGTON

May 16, 1914.

Messrs. J. G. White & Company

43-49 Exchange Place

New York

Sirs,

I have to acknowledge the receipt of your letter of May 9, 1914, enclosing a copy of letter addressed by the President of your company to Dr. Chen Chin-tao.

In reply to your enquiry as to the attitude which this Government would take towards an enterprise of the character proposed by Dr. Chen, that is to say the organization of an international construction for the financing, construction and equipment of future government railways in China, I have to state that the information furnished the Department seems to indicate an intention on the part of the Chinese Government to grant the proposed company a monopoly of railway construction in China. If this understanding be correct, the proposed plan would appear to be in violation of treaty provisions which forbid the establishment of monopolies.

The Department is earnestly desirous of promoting the extension of American trade in foreign countries by all proper means, but cannot give its support to any enterprise which implies an exclusive right upon the part of any one company or group of companies to build and equip railways in any part of the world.

I am, Sirs,

Your obedient servant,

For the Secretary of State,

Robert Lansing,

Counselor.

It is true that the British government also withheld approval until the scheme was officially submitted for its scrutiny. On receipt of this remarkable communication, I hurried to explain that the company had been called into existence by the Chinese government, for the express purpose of internationalizing the railways and eliminating spheres of interest, and, that a contract for 10,000 miles was well within the right of the Chinese government to enter into, as because of its size, assuring a long period of activity for the bankers and constructors, it enabled China to obtain the lowest possible terms. This communication was never acknowledged. However, I was surprised to learn later on, that another state department official informed the representatives of J. G. White & Company, that it was not so much a question of monopoly that bothered the department, as the fact that joining with other nations in the construction of Chinese railways, would involve many difficult international problems which the American government would wish to avoid as far as possible. This seemed to indicate that motives other than those appearing on the surface, were responsible for this remarkable attitude. However, it is only necessary to emphasize at this point, that what was qualified as highly illegal and in violation of the treaties in 1914 when initiated by the Chinese government, became a most praiseworthy and legitimate international

policy in 1918, after the situation had become so confused that international co-operation through a new consortium became absolutely essential to avoid more serious complications.

On learning the above facts, the Chinese government in July, 1914, ordered a temporary suspension of the negotiations. They were never officially cancelled, and the European participants, after consulting their legal advisers, took the position that their rights in any future reopening of the matter had been firmly established. The war intervened, but the rights of the company remained. On my return to China, the high Chinese officials concerned fully concurred in my views, and it was understood that the scheme should be held in abeyance pending a favorable opportunity to resurrect it. That opportunity never arrived, as Minister Reinsch, anxious to do something practical, personally intervened by proceeding to New York the following year to encourage the formation of a new American combination headed by the Siems-Carey Company to enter the field. When the details of the Siems-Carey contracts finally leaked out in Peking, I realized that a great blunder had been made, one which would result in foreign opposition, diplomatic protests and a closing of the field to American capital. The mere fact that the issue of the open door had been raised with the four allies at the same time while they were struggling for their existence in Europe, gave the contract all the ear-marks of an attempt to create friction between America and the Allies, and so redound to the diplomatic advantage of Germany. I reasoned with the contractors, and told them the lines specified would never be built. I placed the facts before Minister Reinsch and was informed by him that "everything had been most carefully considered in advance." When two months later, on the publication of the terms of the final agreement signed on September 27, 1916, the state department declared that it had no official knowledge of the contract, it placed the responsibility squarely up to Peking, and indicated that Minister Reinsch had concealed the facts for four months from the state department in order that the government would have to face the issue. I saw that it would be impossible to support such activities, and as my usefullness with the Chinese in solving their railway problems had been terminated, I determined to leave China and concentrate my efforts towards bringing about international co-operation to avoid more serious complications. The protests of the Russian, Japanese, British (and the subsequent attitude of the French towards the Siems-Carey contracts) told me that the only way left open for American capital to enter China, during the period of the war, was through co-operation with other powers.

I explained my ideas carefully to Sir Bielby Alston, British Chargé, at Peking and to my Chinese friends, who approved of them, and then visited Tokyo to ascertain the attitude of the Japanese government towards such co-operation. Here I was informed by Baron Motono, through Mr. Inouye (now governor of the Bank of Japan), that as Japan held special political and other interests in Manchuria, the Japanese government could not approve of any international scheme, which, although proposed in the utmost good-faith, might conceal a revival of the Knox neutralization plan. They recognized, however, that they had no special rights or position in China proper, and would not oppose any plan for American co-operation in concessions held by their allies, in fact, they thought that cooperation at such a time would strengthen the morale of the Allies. The Japanese, on the other hand, welcomed American co-operation in the development of Manchuria in order that the two nations might work in harmony in this sphere and dispel all causes for misunderstandings.

I then proceeded across Siberia and after an interview with the officials of the Russian foreign office on their position in Mongolia, arrived in due time in London, and later in Paris. In both capitals I fully explained my ideas on co-operation to the leading bankers interested in China and to the officials of the foreign offices. These views were received with great sympathy and approval with the expression of hope that American cooperation with Britain and France in China could be brought about as soon as possible in order to consolidate mutual interests and policies in that country. Both the British and French foreign office officials with whom I conversed, were deeply solicitous in those darkest days of the war, about the trend of American activities in China, which seemed to indicate an intention to raise issues at a time when neither country was in a position to properly defend its rights. Any plan of co-operation in China that would bring America into line with them, would receive their cordial support. With these assurances, I hastened to the United States, arriving two days after the declaration of war with Germany. I laid my plans and ideas before Secretary Lansing, and at the latter's request embodied them in a memorandum. This memorandum follows, and it will be seen that the plan therein outlined, subsequently served as the basis for the new consortium, but expanded in order to meet the new situation arising out of Japanese military activities in China.

For a better understanding of the following memorandum, I might state that when the Japanese presented the twenty one demands to the president of China in January, 1915, Mr. W. H. Donald, then editor of THE FAR EASTERN REVIEW, residing in Peking, was requested by the Chinese authorities to undertake the publicity campaign that would disclose to the world the full import and extent of this *demarche*, and it devolved upon myself to take charge of this work in America while Mr. Donald remained at Peking in direct touch with events. When China found that she had to accept Japan's ultimatum and sign the treaties, I received a lengthy telegram at Washington from Peking, requesting me to see the secretary of state and obtain his promise that the American government at the expiration of the war, either at the peace conference or a separate international convention to be called for that purpose would have the whole question of China brought before the world, in order that her case could be fully presented. Mr. Lansing, in effect, informed me that this was the policy of the administration and gave me permission to so inform Mr. Sha Kia-fu, the Chinese minister at Washington for the information of his government. Later on, in July of the following year when the Russo-Japanese alliance was announced ; in August of the same year, in connection with the further demands of Japan upon China arising of the Chenchiatun incident, and once more in October when the Siems-Carey contracts were protested by the powers, the state department publicly declared its intention to refrain from facing any Far Eastern issues, until the termination of the war, when, at the peace conference or at another special convention, the whole case of China would be taken up and her status defined for all time. With an intimate knowledge of these declarations always before me, I assumed that the administration really had a fixed policy, which explains that part of the memorandum advocating a *temporary* solution of China's problems pending their final adjustment at the peace conference.

MEMORANDUM

A TEMPORARY SOLUTION OF CHINA'S RAILWAY PROBLEMS

Submitted to the Honorable Secretary of State, June 23rd, 1917.

I beg to submit the following suggestions for a temporary solution of these problems, pending a final decision as to the status of China at the *post bellum* peace conference.

You are familiar with the details of the present international political tangle in China precipitated by the American railway contract which raised the issue of the "open door" with the four allies—Great Britain, France, Russia and Japan—at the same time, and you will sense the fact, that notwithstanding the unquestioned purity of motives on the part of the American company, the allies have good reason to suspect that the issue was raised for the purpose of complicating the international political situation. As the state department has publicly placed itself on record that for over four months, it had no official knowledge of the details of this contract, this throws the responsibility for raising the issue upon the officials of the American company.

Such being the case, it should be reasonably apparent that our allies will not be disposed to hold any great friendship for those who precipitated the issue, and, although they have to depend upon us for financial and other support at this time and are reluctant to criticize, it is logical to suppose that they will passively, at least, oppose any further muddling of the situation in China by the selection of other railway lines for Americans to finance and construct, until a disposition to find an amicable solution is mainfested.

The situation at present is that the American contractors having simultaneously raised the issue with the four allies, and having seen their original five lines protested and cancelled, are now negotiating with the Chinese to obtain in substitution and in conformity with the terms of their contract, other profitable lines for exploitation. Obviously, the only lines they will be permitted to select, are what the other powers designate as "buffer lines," or lines between spheres, beginning nowhere and ending nowhere, and whose acceptance by the Americans can only tend to further complicate the situation, by emphasizing the "Spheres of Influence," which, in the end, must embarrass the American government in defending its traditional policy of the "open door." In plain words, the American company will not be permitted to select profitable lines to supercede those that were protested, and, after the refusal of the American government to support the lines originally specified, the Chinese authorities will hardly dare to concede others which may result in further protests at this time.

The situation is further complicated by the fact that the American company has received terms which make it impossible for the European concession holders to finance their own contracts in America. Although the terms are equitable and the contractor is fully justified in asking for and obtaining every legitimate profit as a business proposition, a situation has been created which now calls for a complete revision of China's outstanding railway contracts, covering the construction of 10,000 miles of lines and involving foreign loans aggregating $700,000,000, and incidentally imposing an additional burden of many millions on the Chinese taxpayer. The only possible manner in which these new railways can now be financed lies in the extension of the American terms to all the other contracts, thus conceding terms to the Europeans, which will leave sufficient margin of profit to enable them to raise the funds in the American financial market. As the Chinese government is already compromised to concede the most favorable terms to new German and Japanese lines, the other interested powers, must, in self-defense, and when the time is opportune, demand the extension of the same terms to cover their own contracts.

The situation, then, is this: The American contract precipitated the issue of the "open door" with the four allies at the same time; Great Britain, France, Russia and Japan incline to the belief that it was a German trap, into which the Americans walked with their eyes open; the official European concession-holders cannot finance their contracts in America unless conceded the same terms as the Americans, or better; they are not willing that the American company be permitted to further complicate the situation by selecting other lines; the Chinese authorities will not dare specify other lines which traverse the so-called spheres of special interest; the allies are estopped from openly voicing disapproval at this critical time because of their dependence upon us for financial and moral support in the conduct of the war; they are naturally disinclined to seek or accept terms from any official financial combination, and would rather have the problem approached as a whole so that an amicable solution can be found, acceptable to all interested parties.

The European financiers must rely upon American co-operation to comply with their contracts in China, and to do this, must receive terms equal to the American contract to enable them to obtain this financial support upon a business basis. As long as no effort is made to find a common ground for co-operation, the interested powers can hardly be expected to surrender what they still consider as their special rights and privileges in their respective spheres, nor is it reasonable to suppose that they will permit the Chinese authorities to select further profitable railway concessions within these spheres for Americans to finance and construct until a satisfactory solution is found.

It must be remembered, that previous to the war, American bankers were unable to float loans in America for the development of Chinese enterprises; and, in various past transactions, the major portion of their participation in these bond issues has been subscribed to by the London and Paris markets. It should also be kept in mind that, rightly or wrongly, the British and French feel that the wealth that has rolled into our coffers since the outbreak of the war represents their life-blood, and that it is this wealth that now enables us to seek concessions in China. Relying on our high sense of honor and justice, they therefore cherish the hope that in any American scheme for co-operation in China, they should have the preference, and, while for obvious reasons, they may not openly voice their disapproval at this time (human nature being very much the same the world over) they must view with deep concern the recent arrangement of an American corporation in co-operating with Japan, while our financiers show no disposition to reach some amicable adjustment with themselves.

If the so-called "Spheres of Influence" in China are to be abolished and American capital permitted free scope to obtain valuable railway concessions in disputed territory, it would seem reasonable to suppose that the other powers will be loath to surrender their pretensions and rights at this time, unless some genuine spirit to co-operate with them is manifested by American financiers.

Exclusive of the American contract for financing and constructing 1,500 miles of railways, the Chinese government has compromised itself to the further construction of 10,000 miles of lines with the other powers, of which approximately 7,000 miles are under contract to British, French and Belgian interests, the loans for which have still to be raised when conditions permit. These 7,000 miles of railways will call for, under pre-war costs, approximately $400,000,000. It is manifestly impossible for this amount to be raised in Europe immediately after the war; and, if the lines are to be built at all, the financing will have to be spread over a period of from ten to fifteen years, calling for an annual installment of from $25,000,000 to $40,000,000 for investement in Chinese government railway bonds. This will probably be as much as the markets can absorb. This total might be materially reduced by the elimination of certain sections of the difficult Belgian lines and brought down to about $300,000,000 and spread over a period of ten years. It would be extremely difficult, if not impossible, to raise such a loan at one time for the development of Chinese railways; besides, it would be unnecessary. It is generally estimated that if a Chinese railway proposition is assured of $5,000,000 a year for construction and other expenses, work can be pushed ahead without any fear of financial difficulties.

This being the case, if we take three British, one French, and one Belgian contract to finance, these will call for an annual investment of $25,000,000 in Chinese government railway bonds for the next ten to twelve years, to see these five propositions through to completion. The question therefore arises; is it not better for the American government to use its good offices with its own financiers and persuade them to guarantee the annual investment of $25,000,000 for the next ten or twelve years in Chinese government railway bonds, so as to permit the British, French and Belgians to comply with their obligations in China? Is it not better to make this safe and conservative investment, rather than face the possibility of further serious complications arising out of these railway concessions in China? In other words, is it not best, for the higher interests of the nation, for the government to recognize the present situation and the drift of events and use its influence to have this sum invested as an insurance against possible war, and so amicably settle the Chinese railway problem in such a way that all can work harmoniously together, and take this ever-recurring irritant out of the scope of dangerous international politics? If a disposition be manifested at this time to co-operate with the others, is it not reasonable to suppose that there will be an immediate breakdown of the "Spheres of Influence," and American capital permitted a clear field in China for profitable railway investments?

It may be urged that this is solving the difficulty with the dollar and unbecoming our dignity as a nation, but against this we must recognize that conditions have changed and our bankers must now take over the financial load that London and Paris carried before the war, and reciprocate and co-operate with the others in China. This co-operation must come as a natural result of changed conditions, and no one combination of American capitalists should be permitted to preserve a financial monopoly in China and dictate the terms to the others in such a delicate international problem.

I have refrained from mentioning co-operation with Japan, taking the reasonable position that Japan has accumulated enough wealth out of the war, to enable her to finance her own undertakings in China. It seems unnecessary also to include Russia, for the reason that the only Russian railway concession in China is purely political and Russia is in no hurry to utilize it at this time, being content to keep it in "cold storage." Therefore, our immediate problem is to find a way to work in harmony with Great Britain, France and Belgium in China proper, and in contracts already entered into, and in which Japan has no direct interest, or reason for objection.

If, at the request of, or with the approval of the state department, a combination of American bankers, should guarantee an annual investment of $25,000,000 in Chinese government railway bonds for the next twelve years, at a reasonable rate of profit to themselves, and so permit our British, French and Belgian allies to carry out their contracts and obligations with the Chinese government and thus preserve their prestige in China, it seems clear, that, in addition to the regular banker's profits on the loans, the American manufacturers would also profit from the sale of materials, pending such time as the industrial establishments of the other countries can be reconstructed.

I feel sure that if the president or the secretary of state should approve such co-operation, the interested powers would at once modify their policies and consent to some broader interpretation of their special agreements with China which now restrict our independent action in the development of Chinese railways. Once there is a return of industrial activity in China, internal conditions will rapidly improve, the people will become more contented, and with employment and prosperity, there will be an end to these periodic domestic troubles which have their real origin in economic disturbances arising from the too acute struggle for existence in a densely populated agricultural country. If China is guaranteed fifteen years of respite from these international intrigues for railway concessions, and the harassed officials relieved of the constant diplomatic contest with other powers over these matters, it will enable the Chinese government to devote its whole time and attention to the reform of other pressing domestic problems, and thus make for stability, internal peace and ultimate strength.

It was this solution that I outlined to the British charge at Peking, and afterwards to the head of the Japanese official banking group (Mr. Inouye, president of the Yokohama Specie Bank) and to the officials of the British foreign office, and M. de Margery in Paris, and which received their endorsement in principle, with an expression of hope on the part of the British and French that this co-operation could be arranged before the expiration of the war, as obviously such co-operation at this time would tend to bind our mutual interests in China more strongly together. The Japanese financial interests after consultation with their foreign office informed me that they could have no objection to any co-operation between American financiers and British and French interests in parts of China outside of Manchuria and Inner Mongolia, where Japan considered she had a special political and commercial position. If such co-operation with British and French interests is not forthcoming, if no attempt is made at this time to solve the problem, how can the people of the United States expect that the governments of Great Britain, and France will wholeheartedly support our present policy in China?

Naturally, if a solution is to be sought, the first move must be made at this end, and a basis found upon which American bankers will consent to raise the annual allottment of $25,000,000 for investment in Chinese railway bonds. This is not a question of issue price or interest, but simply the amount of underwriting profit the bankers will require to handle the bonds. The interest and issue price, especially the latter will be governed by market conditions at the time the various installments of the loans are issued and, after approval by the Chinese government. Once the profit desired by American bankers is determined, and a reasonable profit on the construction of the lines and the purchase of materials is provided for the European concessions holders, the plan must be taken to Peking, and presented to the Chinese parliament, so that they can have the final voice in the revision of the old contracts and decide upon suitable terms for the British, French, Belgian, Japanese and Russian contracts. It being understood that by reason of their special understandings with the Chinese government, the Japanese automatically receive the benefit of the most favorable terms to cover their engagements.

The first step must then be made in the United States, and in my judgement, it is a matter of such extreme importance to the future of American prestige in China, that the arrangements should not be left entirely to financial interests, whose energies are now concentrated on finding lines on which they can start work and issue their own bonds before other loans are placed on the market. It is decidedly a matter in which, for the preservation of American prestige in China, and the best interests of all concerned, the state department is called upon to take action and lead the way, in order to avoid further misinterpretation of our policies.

I make the above statement advisedly, for the reason that the only justification the Chinese have for reviving foreign participation in the profits of state railways is because they were led to believe the United States would protect the lines specified in the contract and defend the "open door" policy. A high Chinese official admitted to me that as the American minister had been instrumental in organizing the new American combination and acted as its sponsor, the Chinese authorities had every good reason to assume that the minister acted under instructions from his government, and the United States would now defend the "open door" policy. It was for this reason, and this alone, that the Chinese were willing to *pay the price* in the terms conceded the Americans, terms which overturned and surrendred the one policy they had consistently adhered to for the past twenty years. To anyone conversant with Chinese politics, it is clear that no official would dare to take upon his own shoulders, without reference to parliament or the wishes of the people, the responsibility of again reviving foreign participation in the profits of government owned railways (a privilege that must now be extended to all) unless he could justify himself before the nation by obtaining some greater compensating benefit. The life of any official who would surrender the vital interests of the nation without receiving some greater advantage for the people would not be worth an hour's purchase.

The cherished state policy has been surrendered, and the terms conceded to Americans must now be extended to all other nations. The Chinese have *paid the price*, but Americans have failed to deliver the goods. Is it fair or honorable for the government of the United States to permit an American company to pocket the price, force the complete revision of all China's railway contracts and open the door for all nations to participate again in the profits and management of China's railways, without the Chinese receiving in return what they paid for, or without the Chinese people being permitted a voice in designing a new railway program ? Is it fair or honorable under these circumstances, for the United States government to remain inactive while such a contract is pushed through by an irresponsible official without the people, through their parliament, having a voice in the revision of their railway contracts ? If this contract is permitted to go through without reference to the Chinese parliament and the terms extended to all other contracts, and the people are saddled with additional burdens as a consequence, may it not precipitate another revolution, reacting upon all Americans in China ? Is the state department willing at this time to permit a situation to endure, which can only result in disastrous consequences to American prestige in China ? Are we, at this critical time, willing to permit this situation to develop into a festering sore until the Chinese become inflamed at our indifference to their vital interests, and the progressive masses turn from us as they did in 1905 ?

For this reason, I contend that the matter is one in which the state department must take the initiative. The prestige of every American in China hinges on the attitude of the government in this matter.

I feel certain that if the state department will take action, the patriotism of our bankers will rise to the occasion, and a way found to assist our allies at this time and so stabilize the situation while preserving intact our traditional policy in China, and demonstrating the friendly interest of our government in China's complex problems.

If the secretary of state will even unofficially signify his approval of the principle underlying the suggestion of co-operation as a solution, the way can be found to take the matter up with the leading bankers of the country, and ascertain their views.

Respectfully

GEO. BRONSON REA.

452 Riverside Drive, New York City.

(I invite attention to the fact that the above memorandum was dated June 23rd, 1917. It pointed a solution to the Chinese railway problems, which the administration, over a year later, accepted, and, with certain modifications, placed into practice. A perusal of the state department's letter of July 9th, 1918, to the American bankers outlining the conditions of the new consortium, and the further memorandum of the department to the British, French and Japanese embassies dated October 8th, 1918, will indicate that the plan outlined in the above memorandum, was adhered to in all essential points, especially in that which recognizes the necessity for the United States to carry for the time being the British and French portions of loans to China. The one feature of the new consortium not provided for was the inclusion of Japan in the partnership and the sharing of our burden by the Japanese group for carrying the other two partners. In this one respect, the department, with its more intimate knowledge of international conditions, was able to round out a finished instrument for a permanent rather than a temporary solution of these problems. It is quite clear, however, that these principles were not accepted, until every other device and strategem was resorted to in order that American capital could break through the sphere of influence doctrine and operate independently in China. Minister Reinsch made a determined fight to carry through an impossible program, but in the end, both he and the department, had to accept the principle of co-operation as the only manner in which American capital could enter the railway construction field in China and eliminate for all time the spheres of special interest. Three times in five years the plans of others for achieving this purpose had been thwarted by the absence of an intelligent policy on the part of the Wilson administration, and only when all other methods proved unavailable did it accept the principle.

In a lengthy interview with the secretary of state, I was informed emphatically that the state department had been maintained in ignorance of the existence of the preliminary Siems-Carey railway contract signed in May, 1916, until the final terms of this contract were made public in Washington on October 1st of the same year. This strengthened my belief that American policy in China was being shaped in Peking without reference to Washington. Refusing to embarrass the administration at such a time with newspaper comments or criticisms, I entered the army. On the signing of the armistice, I resigned in order to accept the invitation of Mr. Yeh Kung-cho (China's minister of communications) to act as secretary to the technical commission attached to the Chinese peace delegation, and advise them on the international political complications surrounding their railway concessions and design a new pooling plan to be presented to the new consortium.

The Chinese technical commission, as well as their peace delegates, were sincerely anxious to meet the new consortium more than half-way, feeling that inasmuch as China needed financial assistance, much delay would be avoided and the dignity and sovereignty of their government upheld, if a suitable scheme for pooling their railways could be presented to the consortium as a basis for arriving at an amicable adjustment of the difficulties involved. They felt that much real progress would be made if the scheme finally accepted emanated from the Chinese government, instead of the consortium devising their own plan and forcing them to accept it. There is little doubt that had their views been considered at that time it would materially have contributed to an early success of the new financial combination, by eliminating all suspicion of its motives. The Chinese stood ready to welcome the consortium with open arms. Unfortunately, however, state department officials then in Paris, had very set ideas as to what they wanted.

I have refrained from making public the Chinese memorandum submitted to the consortium at Paris, which met with the approval of the technical commission and peace delegates as reflecting the desires of their government in readjusting its railway contracts. It was assumed at the outset of the peace conference, in fact, up to the very hour of the Kiaochow decision, that principles so loudly proclaimed during the war would be lived up to. It was assumed that henceforth all political considerations would be eliminated from these railway concessions and they could be approached as simple business propositions. Furthermore, in view of the changed financial conditions and impossibility of carrying the old contracts into execution under the terms prescribed in the loan agreements, it seemed logical to assume that the Chinese government would be permitted to exercise its sovereign power and conceded the choice of one or two procedures. It could demand their cancellation, or, it could do the fair thing and reimburse the bankers for out-of-pocket expenses, or, it could go even further and pay them half the prospective profits in order to regain complete jurisdiction over its future transportation system. With this in view, a rough reorganization plan was drafted, but the idea of purchasing concessions did not appeal to the Chinese, who, at that time, were buoyed up by the hope that President Wilson's ideals would prevail and their sovereign rights recognized under the league of nations. The Kiaochow decision shattered this dream. After careful study the plan was revised to meet this objection.

This plan was submitted to the groups, in the hope that China's wishes might be given consideration at the very outset of the negotiations, and so strengthen the position of its government and relieve it of the implied indignity of having terms forced upon it. It was felt that under the new world dispensation, some practical application would be given to the President's fourteen points and China placed in a position to assert her sovereignty. As most of China's railway concessions were extracted under severe diplomatic pressure, it was felt that under changed conditions, China would have the right to cancel them. If increased terms were to be granted, China was entitled to designate the new national railways for opening up the country. In other words, if the principles heralded far and wide during the war by spokesmen for the allied powers were to be applied, then, China as a sovereign state under the League of Nations, held the whip-hand over her future railway development. If a contract is a contract, then all these old railways would have to be built under the terms agreed upon. If not, and China was approached for new and increased terms, then she would be able to refuse, or exact reciprocatory advantages.

The Chinese position was set forth in the following memorandum :

SUGGESTED PLAN FOR THE POOLING OF CHINESE RAILWAY CONTRACTS UNDER THE NEW CONSORTIUM, FOR THE PURPOSE OF ELIMINATING SPHERES OF INFLUENCE AND RESTORING CHINA'S SOVEREIGNTY OVER FUTURE RAILWAY CONSTRUCTION.

WHEREAS ; the Chinese government has in the past been prohibited from developing a comprehensive and co-ordinated system of state railways, because of the pressure brought to bear by foreign governments for the acquisition of special railway rights and concessions, in which the lines bear no relation to the legitimate transportation needs of China, in fact, in many instances designed to divert or attract the trade of China to adjacent territories or to international treaty ports outside the jurisdiction of the Chinese government, or to delimit or develop so-called spheres of political or commercial influence, and

WHEREAS ; this policy has tended to obstruct and delay the proper development of the natural resources and domestic and foreign trade of the country ; and in addition, by circumscribing the sovereign rights of the Chinese government to link up the remote provinces with the capital, and so impeded the central government and its military and police forces from exercising their proper functions in maintaining internal peace and order essential to the stability of the central authority and to the peace, happiness and general welfare of the people, and

WHEREAS ; a situation has now been created as a result of the war, whereby the holders of railway concessions and contracts are unable to carry out their obligations under the terms of their contracts with the Chinese government, because of the inadequacy of the financial terms and conditions, and

WHEREAS ; it is highly important for the welfare of the Chinese people and the foreign nations interested in the trade and development of China to build new lines of communications opening up the country to commerce and thus resulting in mutual and reciprocal advantages, and

WHEREAS ; the Chinese government recognizing the fact that financial conditions have now changed, and desiring to manifest once more that spirit of justice and equity that has always characterized its business dealings with foreign countries, is disposed, on its own initiative, and as a further proof of its good will and friendship, to grant certain revised financial terms and conditions that will permit the holders of Chinese government railway concessions and contracts to comply with their obligations ; it is therefore suggested, that

(1) The Chinese government will cause to be designed under a mixed commission of expert foreign and Chinese engineers, a comprehensive system of new state or national railways, with a total mileage of 10,000 miles to correspond with the total mileage under contract with foreign interests. This national system will conform to the immediate transportation needs of the country and the requirements of the central government in preserving internal law and order, and will be confined to feasible and profitable lines. This approved scheme will then be made the program for construction until the lines are completed.

(2) All holders of railway concessions will surrender to the Chinese government (or to the consortium) all their rights and pretensions, on the condition that they will receive an equal mileage for construction under the new approved system and revised financial terms.

(3) Those who refuse to pool their interests in the new consortium, or who may be refused admission by the official groups, or, for any other reason, will be given due notice by the Chinese government to comply with their obligations within a specified time under the terms of their contracts, failing which, the Chinese government in the full exercise of its sovereign powers will declare their contracts null and void. The foreign governments to whom the concessionaires owe allegiance will abstain from entering any protest or exerting any pressure on the Chinese government to protect the contracts from being cancelled.

(4) In consideration of the new and revised terms to be conceded by the Chinese government for the carrying out of uncompleted railway contracts, the various foreign governments will abrogate and declare null and void all special railway agreements promises and rights that are in any way incompatible with the dignity and sovereignty of the Chinese government, or its full liberty of action in building railways within its jurisdictional borders. This refers to secret and other agreements entered into between the foreign governments and the government of China circumscribing the latter's authority or granting special privileges to the former ; to the secret and other agreements entered into between the foreign governments or their official financial groups defining or delimiting their respective spheres of railway activities in China, and to such clauses in existing or completed railway loan agreements which operate against China building extensions or branch lines.

(5) On the restoration of full sovereign rights in the matter of future railway construction, which is otherwise provided for in the charter of the league of nations, the Chinese government will enter into a binding agreement with the foreign powers concerned, to refrain from granting further railway contracts or concessions for a stated period of years, or during the time necessary to finance and complete the approved national system. It is understood that Chinese capital will have complete liberty in financing and constructing feeders and branches to the main system, and to be permitted to participate in the construction of the main lines.

(6) The Chinese government will then enter into a contract with the international consortium as called into being by the invitation of the American government, or, with a special international railway financing and construction consortium as the case may be, for the financing and construction of the entire scheme of approved railways. In the proposed consortium, Chinese capital is to be conceded an equal participation in the shares and profits of the construction end.

(7) In view of the fact that the Chinese government has entered into contracts with various American and British interests for the building of railways on a fixed percentage of profits over the costs of financing and construction, and to equalize the conditions of all the contracts under the proposed revised terms, the contract for the approved national system will be of the type known as a percentage contract, in which the Chinese government will pay to the banking consortium, or, to the international financial and construction Company, a fixed percentage of profits over and above the actual costs of financing and construction.

Such a contract may follow the general lines of the similar agreement entered into between the American government and the Philippine Railway Company for the financing and construction of railways in the Philippines, where the company was allowed a fixed profit of fifteen and a half per cent., over the cost of financing and constructing the lines, or, the contracts between the Chinese government and Pauling & Company providing eleven and a half per cent. or that of the Sims-Carey contract, or, preferably, the conditions agreed upon in Paris in 1914 for the financing and construction of 10,000 miles of new railways under an international financing and construction company, in which the lines were to be built and financed for a total profit of thirteen per cent., including Chinese participation in the shares and profits of the construction end.

(8) All the railways contracted for under this scheme will be Chinese government owned and operated lines, built /from the proceeds of Chinese government loans, secured by a first mortgage on the physical property and earnings of the lines, and guaranteed as to interest and principal by the general revenues and good faith of the Chinese government.

(9) The usual guarantees for the proper expenditure of the loan funds and the protection of the Chinese government and the bondholders will be given, such as the appointment of engineers, chartered accountants, traffic managers, etc., along the lines of the Pauling contract for the Shasi-Singyfu railway.

(10) To avoid international discord which may reasonably arise if an international organization be designated to construct and supervise any one trunk line, it is suggested that the lines in the general scheme be so apportioned amongst the members of the groups, that each national construction company shall have one complete line to construct and supply with materials. The specifications for the materials for all the lines will conform to a general Chinese government standard to be designed by an expert engineering commission.

(11) This will insure to the manufacturers of each country an equal division in the supply of materials, without having to compete with the manufacturers of all the others. It is entirely conceivable that for the next five years, or perhaps longer, the British and American manufacturers will be in the most favored position to compete for this business to the inevitable dissatisfaction of the French, Belgians or Japanese. It is also conceivable that under anything approaching normal conditions, in any general competition, the Belgian manufacturers would underbid those of other countries. In any attempt to divide the orders for materials on any one line, there is bound to be discord and confusion over the final adjustment. This is the reason why it seems most practical to divide the lines in the general scheme, so that each national construction organization will have full scope for putting into practice their engineering methods without coming into conflict with the others and of having their exclusive market for materials assured

(12) It is also suggested that as a means of facilitating construction and to avoid the losses in interest, etc., surrounding the tieing up of a large loan for any one particular line, and so utilizing to the full advantage the loans that may be annually raised for Chinese railway development, that the annual allottment of railway funds be so apportion that construction can proceed on five lines simultaneously. This will guarantee work and profits for all the national units of the international combination and bring about harmony and friendship, which cannot be accomplished under any other system.

(This suggestion is advanced because in the past, loans for the construction of a complete line have been floated at one time and lain in the banks for several years, or during the progress of construction. It is taken for granted that the average rate of railway construction in China will not exceed 200 miles on any one line annually. As it seems impracticable to attempt to construct a single railway under an international organization, due to the difference in practice and engineering methods, and the conflicts between the engineers and employees of different nationalities, it seems advisable to keep the different nationalities apart in actual construction. The best way would then be to start five lines at once, or sections of five different lines of 200 miles in length that can be financed by the annual allottment of loan funds. If we assume that the new consortium will be able to furnish loans to the extent of 50,000,000 dollars annually over a period of ten years for the purpose of completing the general scheme under contract, instead of floating the loans on the security of any one railway the security could be all the lines

in the general scheme, and the revenues from these pooled for meeting the obligations of the loans. As the general revenues and good faith of the Chinese government guarantees the loan, it seems immaterial whether the loan is raised on the security of one particular line or a group of lines.

(13) In this manner each national participant in the new railway consortium will be able to proceed along lines with which their engineers are familiar without coming into conflict or contact with the others. In other words, the individual lines of the general scheme would be entrusted to one national company to construct and furnish with materials, but would be internationalized and brought under the direction of the consortium through the loan, and after the line is constructed and in operation, in the distribution of the executive posts in the supervision of maintenance, accounts and traffic.

Paris, June 5, 1915.

In effect, this memorandum assumes that the old railway contracts cannot be carried out on pre-war conditions, and the holders must approach the Chinese government for more favorable terms. China said to the consortium and the various governments concerned, "surrender your old contracts, extracted from us by diplomatic pressure in the past, in order that our sovereign rights over our transportation system be fully restored, and then, in gratitude for this simple act of justice, we will invite you to cooperate with us in designing a new national system of railways, and will enter into a contract with the consortium for its financing and construction over a period of years, during which time, we pledge our good faith not to sign any new contracts that may interfere with the successful flotation of the loans required to make your task successful."

In view of the mixed character of her railway agreements, and in order to consolidate all the old contracts under uniform terms, China selected the percentage type of contract along lines similar to the Pauling and Siems-Carey agreements and the American government contract for the Philippine railways which assures that the lines will be constructed economically, efficiently and expeditiously by responsible, reputable and experienced engineers. She furthermore explains that only under some such contract can her capitalists legitimately receive a fair share of the construction profits.

The Chinese proposition deserved better treatment than it received. I am able to state that their ideas were not out of harmony with those of the French and Japanese groups, and although I cannot make such a positive statement in regard to the British attitude, I have reason to believe that they would not be rejected, because of the fact, that the identical principles had been accepted in the international company of 1914, in which the British participant, Pauling & Company, was financed by Erlanger & Company, and the Hongkong & Shanghai Banking Corporation. The opposition to the Chinese proposal, as far as I could learn, emanated from officials of the state department, who reverted to their position of 1914 and denounced the plan as "their old monopoly."

There may have existed other good and excellent reasons to account for the American refusal to consider the Chinese side of the case, pending such time as the political phases of the consortium were clarified by the adherance of the various governments to its principles. It is also easily understandable that the consortium could not function until its internal organization was perfected, but nevertheless, I hold firmly to the belief that a great mistake was committed at the outset by completely ignoring the Chinese memorandum and characterizing their solution as a monopoly, at a time when they cherished the illusion that their sovereign rights were to be firmly established and recognized under the new order of things.

It goes without saying that Mr. Lamont or his American co-workers had little intimate knowledge of the technical phases attached to the Chinese side of the case, their opinion being influenced to a large extent by the advice of others. Naturally enough, the Chinese idea of construction companies or a consortium organized on a basis that would eliminate the financiers and bring in experienced constructors as principals in their railway contracts, was bound to be knifed by those whose interests were opposed to this system. This is simply another phase of the constant warfare between the great construction companies of the world who operate on a percentage or a cost-plus-a-fixed-sum basis, and the adherants to the other system which concentrates all the power under an individual engineer-in-chief, directly responsible to the banks. Both systems have their advocates. The superiority of one over the other is purely a matter of opinion, as a rule most biassed opinion based on self-interest. The Chinese have learned that the engineer-in-chief or departmental system of building railways has many drawbacks and, in 1914, definitely embarked upon a program for building their lines under the other system. It was only natural that a program recognizing the rights of their banks to participate in the issueing of the loans, and their capital to enter into partnership with foreign construction companies would be revived when the opportunity presented, as the same group of officials who sponsored the 1914 program were again in power in 1919.

Consortium leaders are inclined to stress the point that its organization has had the good effect of developing the formation of a group of native bankers for the purpose of co-operating in the issue of internal silver and other loans, but they overlook the very important fact, that in 1914, in the organization of the international construction company, the official British, French and German groups who stood behind their constructors, conceded to the Chinese banks participation in the profits of issueing the loans, the establishment of branches of the Bank of Communications in London, Paris and Berlin with the right to act as depositories for a fair share of the loan funds, as well as the privilege of Chinese capital to participate in the construction profits. That much had been gained for China in the negotiations that were characterized as illegal and in violation of the treaties by Secretary Bryan. The Chinese gained handsome concessions from the European groups at that time, and resented the ignoring of their position when their proposition was turned down in 1919 at the peace conference.

With a knowledge of these facts it is difficult to see where the consortium can take unto itself any undue credit for forcing the Chinese bankers to rely on themselves, or for the tardy recognition of their privilege to participate in future consortium loans to their government. On the other hand it would appear to represent a determined effort on their part to oppose the new consortium for its failure to recognize the concessions gained for them in 1914. For, it must be borne in mind, that the Chinese officials who stood behind the 1914 program, are the same gentlemen who to-day dominate the finances of China through their pre-eminent positions as presidents or large shareholders in the many semi-official banks which form the backbone of the new banking system in China.

The difficulties confronting the consortium at the present time, with an important section of public opinion in the United States declaring that it has outlived its usefullness by reason of the treaties signed at Washington, should compel attention to the facts disclosed in this article. The arguments in favor of its existence overwhelmingly outweigh those in contra, and a supreme effort should be made to conform more to the spirit of the times in recognizing the right of the Chinese to propose some program that may serve to bring harmony out of discord.

Nothing that the consortium can now do will outweigh the results of the Washington conference. The contracts pooled by the various groups are not worth the paper they are written on, if the Chinese determine to hold out for the full exercise of their sovereign rights to dictate how, where and when, their new railways shall be built. This is the crux of the situation. The question of whether the lines are to be built departmentally or under the percentage system is a minor one. The Chinese say to the world, "we want our own national system of railways for the development of our country along lines that will add to our own prosperity, and not that of leased or treaty ports outside the jurisdiction of our government. Surrender your pooled contracts to us, so that our sovereignty over these rights is fully restored; give some practical evidence that the principles you loudly proclaim are to be carried into effect. In return, we will accept the proffered assistance of the consortium to finance and construct a national system of railways equal at least in mileage to the lines surrendered." This is the first step in the program. The question of how the lines are to be constructed, operated and managed are secondary considerations.

It should not be difficult for the consortium leaders to find some solution to this muddle. The last administration failed to understand the Chinese, and it is again up to the practical statesmen of the Harding cabinet to put into practice a policy that their predecessors appropriated from others and were unable to carry into effect.

If there is any sense of justice in the make-up of the present administration at Washington, the rights of the 1914 international construction company in the building of Chinese railways, calls for careful consideration. The former administration not only arbitrarily declared the company illegal and in violation of treaty provisions, but four years later, when it found that its own misdirected activities had effectively closed the door to independent American operations in China, invited the organization of another international combination to supplant it.

The future of the present consortium, as far as the construction of railways is concerned, would seem to lie along lines that will take the solution of the Chinese railway problems out of the hands of bankers and lawyers and hand it over to railway experts. The consortium has faithfully carried out the dictates of the foreign offices. It has proved its worth as a political instrument. The results of the Washington conference however deprives it of any further political significance and provides the opportunity for its critics and enemies to advocate its dissolution. If it is to succeed it must function. If it fails to function it will stand as a monument to the inefficiency of American diplomacy. Harding and Hughes saved the nation from the complete breakdown of our diplomacy in the Far East by calling the last conference. They can save the consortium and our national prestige by similar sensible methods.

The bankers have nobly fulfilled their function by paving the way. Let them now retire gracefully and permit experienced railway constructors to come to the front, complete their work and together divide the honors of success. Let the American group turn to Mr. J. G. White and W. F. Carey, to organize an American railway construction company, a guarantee that American prestige and business honor will be upheld in dealing with the Chinese; let the British group bring about a combination of the Pauling and British and Chinese Corporation interests to act for them in the construction of Chinese railways: let the French group support M. Edouard Gouin, of the Societe Construction des Batignolles, the foremost railway builders of France, and the Japanese get behind a construction company organized from the engineering staff of the South Manchuria Railway Company, with their intimate knowledge of railway construction in China, and then, when these preliminaries are completed, let Mr. Hughes call these experts to sit around a table in Washington with Yeh Kung-cho, C. C. Wang, K. S. Kwong, or other acceptable Chinese representatives. In one or two sittings the deadlock will be broken and a way found to commence construction on the much needed transportation system of China.

The consortium will be there very much in evidence standing behind the construction companies (in which Chinese capital will be admitted to a fair participation), retaining the power, but the detail work handled by men who know their business. The consortium will stand for the purpose of administrative and other development loans, but the railway program will remain outside its immediate control. The British, French and Japanese groups, have , in the past, expressed a desire to be relieved from supervision over Chinese railway construction, prefering to have the constructors act as principals and bear the brunt of settling the many petty technical questions that arise daily in the course of Chinese railway construction.

If the consortium is to function, something should be done without waiting for the Chinese to arrive at the brink of bankruptcy and compelled to accept its terms as the only way to avoid international control over their finances. Good business judgment and wise statesmanship should forsee that under such circumstances, the Chinese will feel dissatisfied and resentful. Harmony and good-feeling is highly essential to the success of the consortium.

I do not hold that the plan outlined is flawless, but imperfect as it is, it recognizes certain important facts that the last administration repeatedly ignored, until their acceptance became compulsory. There is a solution to the consortium problem in the above ideas, and if the bankers will consent to step aside while Secretary Hughes calls into conference the expert railway constructors of the consortium powers and representative Chinese engineers, a way can be found to co-operate with the Chinese in some legitimate manner that will break down their opposition and permit the consortium to function.

GEO. BRONSON REA.

Addis Advocates New Consortium Policy

Negotiations with autonomous provinces of China for the construction of railways rather than the complete suspension of activities on the part of the Chinese consortium because of the present division in the government of that country, is advocated by Sir Charles Addis, chairman of the Hongkong & Shanghai Banking Corporation, director of the Bank of England and head of the British group in the consortium. Sir Charles was the guest of honor and the principal speaker at a luncheon given by Thomas W. Lamont, of J. P. Morgan & Co., at the Downtown Club of New York on March 28.

Sir Charles also believes that despite unsettled conditions in China, which have become a bar to much of the proposed financing by the consortium, there is still the possibility of arranging a comprehensive funding loan for the conversion of the Chinese floating debt. After reviewing some of the troubling conditions which have arisen out of the difficulties between the factions of North and South China, Sir Charles said:

"In the face of all these contradictory compensatory factors what policy ought the consortium pursue? Clearly we cannot take sides in this matter, or support one political party against the other, until, we are assured that they are in the way of composing their differences and have the will to unite. I do not think the same objection would lie against a comprehensive funding loan for the conversion of the floating debt, since that would inure to the benefit of all parties, but with that exception the consortium is, for the present at any rate, debarred from undertaking government loans for administrative purposes in China.

"Indeed, I will go further and say that it seems to me unreasonable to hold up the development of communications in China while the government is engaged, it may be for a generation, involving a new political system. In my judgment the time has come for the consortium to consider the practicability of negotiating independently with an autonomous, or group of autonomous provinces for the construction of specific railway undertakings within their respective borders."

Sir Charles expressed optimism concerning a final settlement of China's internal strife. In this connection, he said:

"The process may be slow and tedious and I can understand the impatience of those who would like to accelerate it by placing China under the tutelage of the foreign powers. I can understand that policy, but I am convinced it is a chimera. In the last resort, foreign intervention implies the sanction of force, and the employment of international force in order to coerce China is not a practical policy. China must work out her own salvation. All we can do is to stand by and, in the words of the Washington conference resolution, provide China with the freest and most unembarrassed

It should not be difficult for the consortium leaders to find some solution to this muddle. The last administration failed to understand the Chinese, and it is again up to the practical statesmen of the Harding cabinet to put into practice a policy that their predecessors appropriated from others and were unable to carry into effect.

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The consortium will be there very much in evidence standing behind the construction companies (in which Chinese capital will be admitted to a fair participation), retaining the power, but the detail work handled by men who know their business. The consortium will stand for the purpose of administrative and other development loans, but the railway program will remain outside its immediate control. The British, French and Japanese groups, have , in the past, expressed a desire to be relieved from supervision over Chinese railway construction, prefering to have the constructors act as principals and bear the brunt of settling the many petty technical questions that arise daily in the course of Chinese railway construction.

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"Indeed, I will go further and say that it seems to me unreasonable to hold up the development of communications in China while the government is engaged, it may be for a generation, involving a new political system. In my judgment the time has come for the consortium to consider the practicability of negotiating independently with an autonomous, or group of autonomous provinces for the construction of specific railway undertakings within their respective borders."

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The Kiangsi Railway Loan

China's Commercial Honor at Stake

THE Japanese chargé d'affairs recently dispatched a note to the Waichiaopu urging the payment of three instalments of overdue interest on the Kiangsi Railway loan, adding that unless paid by August, the creditor, the East Asia Development Company, will be obliged to take over control of the line in accordance with the terms of the loan agreement. This railway, about 80 miles long, connecting Kiukiang with Nanchang, the capital of Kiangsi province, has been in constant financial difficulty since its construction was first started. The amount owing to the Japanese company is about $2,500,000 silver, and owing to mismanagement and the other mal-practices peculiar to the operation of private Chinese railways, the company has been unable to pay the last instalments of the interest due. With the menace of foreclosure and Japanese direction, the officials of the company have been active the past year in attempting to raise funds to meet their obligations. The line itself is merely the first section of a provincial system, the concession for which is held by the company under a provincial charter, and cannot be expected to pay until extensions are built south and east from Nanchang, connecting the Yangtze with Canton, Swatow or Foochow. It was proposed last year by the president of the company that a new and larger loan be entered into with the Japanese in order to absorb the old one and provide for these extensions, but apparently, the latter are in no mood to advance further sums, under the present administration of the line and the unsettled political conditions prevailing in the province.

Unless the Chinese can raise the funds to meet this obligation, the warning of the Japanese chargé d'affairs, indicates that the creditors will, after a due period of grace, proceed to take over control. This is the only instance where a Chinese railway in operation has been mortgaged on the security of the physical properties and revenues of the lines. In all the old railway agreements, in order to eliminate the possibility of foreign control in the event of default, the Chinese allocated other revenues as security for the loans. In the Pauling and Siems Carey contracts, the line and revenues are pledged, but as these remain on paper, the issue of intervention on default of payment of interest has never before arisen. Here we have a case that will test the sincerity of the Chinese towards these matters. The onus of taking over control of a Chinese railway, with all that this implies in the minds of the Chinese towards their sovereign rights, will have to be borne by Japan, and it is to be expected that any step taken to execute the terms of the contract will be misinterpreted and the truth distorted in order to create suspicion of Japan's motives in the minds of the Chinese. The situation is, therefore, one of considerable interest to all concerned in the development of China, especially at a time when Sir Charles Addis, head of the British group in the consortium, is advocating the opening of negotiations with the provincial governments as a means of solving the present consortium deadlock. Provincial revenues, like all those pertaining to Peking, have been diverted into the pockets of the *tuchuns*. In many instances, taxes have been paid in advance for a term of years, in order to satisfy the craving of the insatiable military satraps. An example of how far the receipts from legitimate taxation have fallen off in the provinces and municipalities is seen in the publication in our February number of the budget of the city of Canton. Out of a total budget of $2,000,000, twenty-five per cent. is derived from the "sing-song" girls, and fifteen per cent. from the rickshaw coolies, a total of forty per cent. from sources that indicate in no uncertain manner, the desperate need for revenue. If this is the condition in a city which, we are assured by all competent witnesses, is a model in municipal government in China, what must be the conditions in other cities dominated by grasping military chieftains? It would seem to indicate that reliable provincial and municipal revenues that might serve as security for railway or development loans, are difficult to find.

The issue involved in the payment of the Kiangsi Railway loan is, therefore, one that should merit the close attention of foreign financial interests. The province, to all appearances, is sucked dry. It cannot come to the aid of its own railway. The central authorities are in a similar plight. Foreclosure, or foreign control of a security, has to be faced. It is the only tangible asset left to the Chinese on which they can hope to interest foreign capital in their development. If, when the time arrives to take over control on default of payment, the Chinese object, what then is left for them to offer as a guarantee of good faith?

The treaties entered into as the outcome of the Washington conference relieves China from any fear that the Japanese government or its private enterprises will harbor political designs in pressing for their just rights. The old fear of political penetration through control of railway lines cannot now be fairly advanced as a reason for the non-compliance of the loan terms. The contract rests squarely on its merits as a business proposition, and cannot be shirked by an appeal to political passions. The future of foreign investments in China is at stake on the outcome of this situation.

* * *

The Railway Aspect of the Consortium Organization for China

(*Contributed*)

FROM the railway point of view, realization of the consortium ideals will bring to China the following desirable changes:— The total abolition of spheres of influence, the provision of an adequate railway system, and improved methods of operation with its corollary standardization.

These results are contingent on the assumption that the consortium terms will be accepted by the Chinese government. Until then, interest in the consortium must remain academic. At present, China shows no inclination to agree, considering her sovereignty endangered by the demand for supervised disbandment of her army, an absolute necessity for the security of any new loan.

That the sovereignty agitation is inspired, goes without saying, as disbandment means an end to the clique of military autocrats now ruling the country. There is no means of coercing these brigands, who, blind to China's interests and bent only on amassing vast private fortunes, are fast ruining the country by maintaining troops out of all proportion to the country's needs. China is perpetually on the brink of civil war as her soldiery owe allegiance only to the men who maintain them in licentious ease, men who would not hesitate to use this power for purely private ends. China is in a condition of rampant feudalism and nearing a first-class catastrophe. There must be a limit to increased taxation to support the armies, and with the new solidarity in financial matters which the consortium spells, there will be no chance for the honest broker among jealous and greedy powers such as gave Tang Shao-yi his opportunities in the first consortium negotiations of 1912-13.

In China, as elsewhere, the natural corollary to an empty treasury is mutiny, revolution and the rise of a strong man. Bankruptcy also implies more stringent foreign control of such organizations as the customs, salt gabelle, and certain railways built with foreign loans.

The hopelessness of the financial situation needs no emphasis, when it is recalled that China has recently defaulted in the matter of a comparatively small loan made by American finance. It would appear, therefore, that the consortium terms must be accepted sooner or later. These terms would embrace disbandment of the standing armies; re-union of the North and South and assignment of part of the loan to the South; supervision of loan expenditure by consortium representatives; pledging of the salt gabelle and customs to guarantee repayment.

This article pre-supposes the creation of a railway service somewhat on the lines of the customs and salt gabelle, a logical corollory of the pooling of the various national interests. The original proposals emanating from Chinese sources were for the consolidation of the capital of the various foreign-built railways into one joint loan, indicating that this idea would not be repugnant to China. In this case, everything would be centralized in Peking under one man to the lasting benefit of the country and the elimination of much unnecessary personnel from the conduct of railway affairs. If the consortium is bent on assisting China to rehabilitate herself, foreign control of the railway policy must be insisted on. Foreign direction is needed to see that there is no unnecessary railway construction and also to ensure the proper development of, and additions to, existing lines out of revenues.

At present, the vital railway needs of the country are limited to the completion of the Canton-Hankow Railway, in order to unite the North and South, prevent the recurrence of further factional disturbances and open up a district of vast industrial possibility. The Hankow-Szechuan Railway is equally important to the general welfare, for the better maintenance of law and order in the isolated province of Szechuan and for the development of that enormously wealthy province. With these two most expensive projects completed, attention should be turned to the development of a national steel industry, simply from the point of view of obtaining cheaper steel for railway construction. When it is recollected that fully thirty per cent. of the pre-war cost of railways in China was for products in which steel is the essential material and that this ratio will now be more than doubled, the importance of this development needs no urging. China should be able to produce the cheapest steel in the world. At present nearly all the ironworks in the country are either mortgaged to Japan or in Japanese hands and Japan herself needs all their output.

Lastly, from a purely humanitarian point of view, the regulation of the Huai River, and the conservation of the Grand Canal and Yellow River are of first-class importance as they constitute in their present condition a perpetual menace to the lives, property and crops of many thousands of people.

With the completion of these very urgent projects and the inauguration of an era of most rigid but wisely directed economy, it is believed that China, could, from the profits of the railways in existence, very quickly create an adequate railway system. Foreign direction, and above all, strong governmental support of that direction, are an absolute essential, unless China can produce a man worthy of consortium trust.

Spheres of influence, now happily eliminated by the Washington conference, have cost unhappy China untold millions for railways alone, for these must now be constructed at a cost vastly increased by war conditions, while the delay to education and the advent of that era of profound peace so absolutely necessary for recuperation cannot be estimated.

With regard to the question of an adequate railway system, the following figures are instructive as comparisons with other countries; the Indian figures being particularly striking as conditions and needs are somewhat similar.

The total mileage of railways of all classes, government, concession and private, is 6,836, giving for exch mile of line a population of 100,000 people and 460 sq. miles of territory. The United States has for each mile of railway 3,800 people and 12 sq. miles of territory, while India has 8,600 people and 40 sq. miles of land for each mile. Thus, to bring China up to Indian standards, China has yet to construct some 29,000 miles, a figure giving some idea of the colossal nature of the consortium undertaking and its possibilities for world tradc.

The above comparisons do not, however, represent the true position *vis-à-vis* other countries, for elsewhere road construction has gone hand in hand with railway construction and with the vast development of motor traction are increasingly used as an adjunct to railways. China, however, is entirely without a road-way system and its need of railways therefore all the more urgent, from every point of view.

To the handicap of bad roads, must be added the hampering effect of many dialects, the presence of numerous *likin* or native custom stations each levying a dole fixed by the needs of the local magistratc; and the risk of pillage by banditti, ever on the increase since the revolution. The following statements will cause no astonishment. Outside the railway zones the grossest superstition still prevails which can be, and is, often worked upon to retard progression. Ignorance is appalling and abysmal, and the outlook of the country people limited by the exigences of a grinding poverty and the struggle for the barest existence. Only purely local needs are manufactured for; standards of length, coinage and capacity, vary from village to village and there may be surplus in one district and famine in the next. There is no patriotism of a large kind and village welfare is of such paramount importance as to obscure all larger issues. With no press or politics the outlook of the coolie class is limited by interests of birth, marriage, death and above all, crops. These factors in the Chinese problem need serious consideration by those who would embark on development work in China. For such, strong government backing is an absolute essential to success, as the unhappy fate of many past enterprises proves.

On the question of improved operation, the following facts are illuminating. Thus, in the board of communications' (1919) report it will be found that 16 railways are concerned with a total mileage of 3,750. For these there are 17 practically separate administrations, the Tientsin-Pukow Railway having two as the line was constructed under a joint Anglo-German loan as traversing two spheres of influence. Yet the total mileage of the whole line is 688. There are other more flagrant instances such as the Taokow-Chinghua and the Chengtai railways with mileages of 95 and 151 respectively, which obviously should rank as branch lines, were it not for loan agreements which demand independent administration, an expensive and absurd arrangement which centralization following Consortium control will eliminate. Contrast such practice with the Cape government system with 9,500 miles under the control of Johannesburg.

As regards the board of communications itself, the following reform should result as a corollory of consortium control. At present, the position of board officials and many more prominent outside railway employees, is assured only so long as their party remains in power. With a new cabinet, in all probability there will be a clean sweep of the old *régime*, a procedure not calculated to promote either efficiency or intelligent interest in the work of the board and eminently conducive to corruption. It must be remembered that an official once out of employment is, caste and face reasons aside, not often fitted for commercial life—the only prospect open to him. He must, inevitably adopt *carpe diem* tacties while in office to the exclusion of all else, for official pay of all but higher posts is totally inadequate to acquiring a competence. The present system cries for reform and the creation of a picked permanent staff in such a specialised department as the railway board indubitably essential.

Again, with regard to board railway policy, a radical change is essential. At present, the railways in operation are starved of all but vital maintenance needs and there is consequently no development of open lines, every one of which is capable of handling a vastly increased traffic, which the building of feeder lines would ensure. No single railway* in the country has yet reached the maximum capacity for single line traffic, yet no branches are built. During the year 1918, the profit on the government railways was over 33 million dollars, over 10 per cent. on the invested capital, yet the mileage added during the year was only 18. Previous years would not exceed this and although years of war, the contrast with Indian (pre-occupied with the creation of a railway system for Mesopotamia) is singularly unfavorable. During the years 1914 to 1918, the mileage of the railways of India was increased by 1678, this in a country with a well-established road system and no such crying need for better communications as China.

*The Peking-Mukden Railway is being double tracked over a length of 80 miles.

This stagnation is in no sense the fault of the board but merely a corollory of *tuchun* or militaristic government which makes insatiable demands on every source of income. Thus, in the budget for July 1919 to June 1920, totaling some 645 million dollars, military expenditure is estimated at 40 per cent. Anyone with any military knowledge or even a laymen who observed the conduct of Chinese troops in the recent factional fight between the Anfu and Chihli parties, would have no hesitation in condemning the vast majority of China's army as an undisciplined rabble, totally devoid of every quality making for military efficiency, skilled only in the gentle arts of pillage and senseless destruction, bashibazouks without the redeeming quality of a fierce courage. Rigidly supervised disbandment of these uniformed pests is a necessary preliminary to all reform and the first great work of the consortium will be to terminate this useless and wasteful swashbuckling and ensure that a non-military country, where all progress hinges on communications, is not in future disgraced by a budget which allocates one per cent. of its receipts to education and ¾ per cent. to industrial development. In future, railway surplus must be earmarked for railway development.

To similar causes must be ascribed the rolling stock shortage which is still acute. The railways as a whole are hopelessly underequipped when contrasted with Indian and other railways and the tonnage offering is continually on the increase. The table shows the contrast in this respect between India and China for three principal lines:

India	Wagons per kilometre	Engines per kilometre
Bengal-Nagpur	5	0.17
B.B. & C.I.	0.42	0.18
East Indian	7.8	0.57
China	Wagons per kilometre	Engines per kilometre
Tientsin-Pukow	1.26	0.103
Kin Han	1.95	0.137
Peking-Mukden	3.52	0.242

Consortium control will render impossible mismanagement of loan funds such as occurred during the construction of the Ningpo-Hangchow Railway when native companies were allowed to squander £1,500,000 of borrowed money for which the central government was liable, on the construction of a line, which, even with this aid, they were unable to complete and which had eventually to be taken over by the government and handed over to the management of the Shanghai-Nanking Railway for completion and re-construction.

Such wholesale peculation as occurred during the construction of the German section of the Tientsin-Pukow Railway should not be possible in future, together with such diversion of loan funds for industrial purposes as frequently occurred during the war, when Japan financed China without restriction for most questionable considerations. More particularly, the making of such contracts as the car purchase† agreement with Japan on behalf of the Tientsin-Pukow Railway, should, in future, be out of the question, just as much as the creation of monopolies of supply to government departments which was also attempted during the war.

Finally, the question of standardization needs emphasis. As things are at present, though such essentials as render car interchange possible on the government railways have with one exception‡ been provided for, in constructional details generally, the ideas of the country financing the enterprise have as a rule prevailed. The consequence is that each administration has its own standards, a factor tending to restrict car interchange, as repairs are not feasible away from the home line. This tendency to multiply standards has been accentuated by the recent war which made America the only possible market, and though, as a rule, efforts were made to preserve uniformity, it was difficult to fully meet the required specifications.

Standardization, though most vital in the case of rolling stock, is urgently needed in all departments and a commission of foreign experts appointed in 1919 is now advising the board of communications on this question. With the larger question of inducing conformation to standardization on the concession lines like the Chinese§ Eastern, South Manchuria and Tsingtao Railways, over which there is no government control, consortium pressure will be needed. This last is a big and vital question, as the Chinese Eastern has a gauge of 5-ft. and the South Manchuria a different height of coupling gear which entails transhipment and consequent congestion at junction points.

This indicates the railway and larger side of the work to be done by the consortium, and those who have the true interest of the country at heart will do all in their power to assist an organization whose success offers the only peaceful and permanent solution of the Chinese problem. The first essential to success depends on most rigid control of free-lance finance, which without morals, creed or country, is always ready for profitable fishing in troubled waters.

* * *

Electrical Machinery Markets in Japan

A Promising Outlook

THE development of hydro-electric power in Japan is still in its infancy. Much has been accomplished in utilizing the natural water powers of the empire, but much more remains to be done. The business slump of 1920 brought to a sudden stop many ambitious schemes for the erection of new power plants, and further development has been checked for lack of capital. But with a return of confidence and a brighter outlook, some of the larger schemes are being revived, and we find in the island of Formosa, one of the largest hydro-electric plants in the world being financed and constructed largely by the government. The well-known American engineering firm of Stone and Webster have representatives on the ground negotiating with the Asano interests for the construction of a most important project, the details of which, as yet, have not been made public. Other large hydro-electric enterprises are waiting for the proper time to solicit new capital in order to carry out their huge plans. Amongst these is the Inawashiro Hydro-Electric Power Company, Ltd., of Tokyo, controling the water rights to a chain of lakes emptying into Lake Inawashiro and to its outlet, the Nippashi River. Seven large power houses are embraced within a comprehensive plan for the utilization of the water shed drained by the Nippashi River. Foreign manufacturers of electrical machinery and supplies should give careful study to the trend of this development in Japan, with its tendency to utilize more and more the products of home manufacture. The Japanese have made marked advances in developing their electrical industries, and despite foreign criticisms of the efficiency of their machinery, the truth stands that many important plants are now being operated with equipment made in Japan that in many respects equals the more widely known products of America, England or Germany. The day will, therefore, arrive when foreign manufacturers must face these facts and be prepared to meet Japanese competition in other parts of the Far East.

Machinery that has proved its excellence in Japan will make a strong appeal to other Asiatic people. It is for this reason that we invite special attention to the equipment of the generating plants of the important Inawashiro Hydro-Electric Power Company. The first power house, it will be noted, was equipped throughout with foreign materials; the penstocks from Thyssen & Company of Germany, the water turbines from J. M. Voith of Germany, generators and exciters from Dick, Kerr & Company (English Electric Company, Ltd.) of England, the main transformers and switchboard from the Westinghouse Electric & Manufacturing Company of Pittsburg and the traveling cranes from English makers. In the No. 2 Power House, the penstock was furnished by the Tokyo Ishikawajima Shipbuilding Co., Ltd., the water

†200 30-ton cars at $3 per car per day for 15 years.

‡C.E.R. now a Russo-Chinese Railway.

§The Chengtai Railway which is a metre gauge line—a grave economic mistake for which French engineers are responsible.

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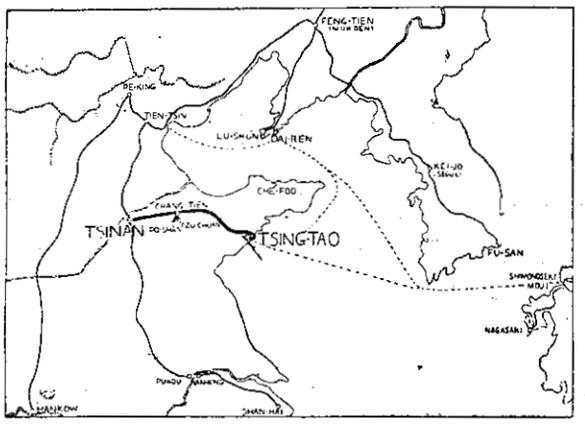

THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.
For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.
Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.
The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1 leaves Tsingtao daily 10.00 p.m. arrives Tsinan 8.00 a.m.
Train No. 3 leaves Tsingtao daily 8.00 a.m. arrives Tsinan 6.40 p.m.
Train No. 2 leaves Tsinan daily 11.00 p.m. arrives Tsingtao 8.35 a.m.
Train No. 4 leaves Tsinan daily 10.10 a.m. arrives Tsingtao 8.20 p.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.

BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.

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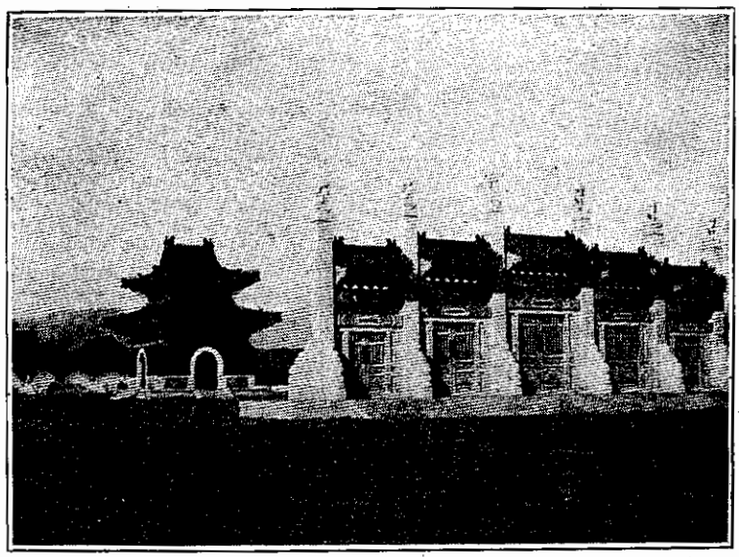

AT THE CHUNG LING TOMBS

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THE Peking-Hankow Line, the most important section of China's overland route, enables tourists and travellers to get a glimpse of Old China, the train passing through magnificent scenery, traversing the great plains of Chihli, the central portion of Honan and the mountainous regions of the eastern Hupeh province.

The Peking-Hankow route joins at Fengtai the main line of the Peking-Mukden Railway, by means of which this line is connected with the railways in Manchuria, Korea, Japan, and Siberia, while steamer facilities at Hankow bring it into easy communications with the Yangtze River ports and Shanghai.

From the Capital to Hankow the journey occupies 34 hours, by the daily through train which is provided with up-to-date sleeping and dining accommodations.

In the future, this line will connect by means of a ferry-boat the Hankow-Canton Railway whose completion will bring the Capital of China, and Hankow, the Great Central Market, within easy distance of Canton the southeastern metropolie.

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PERICLE CHIERI

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

上海仁記路第五號

遠東時報

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JAPAN'S ELECTRICAL DEVELOPMENT

CHINESE EASTERN RAILWAY

Vol. XVIII JUNE, 1922 No. 6

SHANGHAI, PEKING, TOKYO AND MANILA

A. L. TAYLER.

agreement, as well as a brief statement of the circumstances that lead to its adoption.

The gentleman's agreement, as it commonly has come to be called, resulted indirectly from an anti-Japanese agitation in California, and to some extent in other sections of the Pacific coast, which demanded a cessation of the immigration of Japanese laborers to America. It is not in any legal sense a formal treaty or agreement, and the term applies merely to the substance of a number of informal notes, exchanged in 1907 between secretary of state, Root, and Ambassador Takahira, of Japan, discussing the subject of the regulation and control of Japanese immigration to America, and culminating in an understanding by the terms of which Japan pledged herself upon her honor as a nation to limit the issuance of passports to such of her subjects seeking to go to continental United States as fell within the following designated classes, namely :—

(1) Non-laborers ;
(2) Former residents ;
(3) Parents, wives or children of residents and
(4) Settled agriculturists.

The first class embraced only non-laborers, such as merchants, diplomats, professional men, financiers, students, travellers; and so forth, who, as before, were permitted to come and go at will. The second class embraced any Japanese, non-laborer or laborer, who sought to come to continental United States to resume a formerly acquired domicile ; in other words, any Japanese who had already become a resident of America but who had returned, or in the future might return, to Japan for a visit. The third class comprised exactly what it states, namely, the parents, wives or children of residents, firmly granting the right, therefore, of a Japanese resident of America to send to Japan for his wife, parents or children. The fourth class related to such Japanese as had already invested in farms or other agricultural enterprises in this country and who, desiring to assume active charge of such farms or enterprises, were granted the right of entry into America and have come to be referred to as "settled agriculturists." Also, Japan, of her own accord, agreed to deny passports to Japanese laborers desiring to enter territory contiguous to continental United States, such as Mexico and Canada.

From this it will be seen that while the gentleman's agreement did rigorously restrict, it did not contemplate or seek to secure the total preclusion of Japanese immigration to America and, therefore, did not amount to an exclusion act ; nor has it ever been so regarded by those informed upon the subject.

Thus having established the history, the terms and the intent of the agreement, the next step is to ascertain if—as so frequently charged—it has been violated by Japan. Regard for the facts compels the emphatic declaration that it HAS NOT, for, despite all the assertions of the anti-Japanese propagandists, I am unable to find in any of the reports of the United States commissioner general of immigration a single case wherein Japan has been shown to be guilty of any violation, but do find, upon the contrary, in these reports and in statements emanating from other official sources that she has kept the terms of the agreement. The 1919 report of the United States commissioner general of immigration makes the following statement :—"It will be remembered that the passport agreement, which was made in 1907, provides, in effect, that Japan will not issue passports good for continental United States to laborers, unless such laborers are coming to resume a formerly acquired domicile, to join a parent, husband or children, or to assume active control of an already possessed interest in a farming enterprise in America. While the agreement relates only to immigration to continental United States, Japan soon voluntarily extended the same provisions to the movement to Hawaii, so that in effect all immigration of Japanese laborers is subject to its terms. Non-laborers, of course, are not affected and are free to come and go under the same conditions which obtain in the case of aliens of other nationalities." Also, we find the acting secretary of state, Mr. William Phillips, saying in a letter to Hon. James D. Phelan, under date of August 28, 1919, that :

"Adverting to your letter of July 24, relative to the so-called 'gentleman's agreement' between this government and the government of Japan for regulating the immigration of Japanese to the United States, I have the honor to say that, after giving due consideration to certain facts and figures recently obtained from the honorable the secretary of labor, I have confirmed the opinion which I have held for some time on this subject ; that is, that the present arrangement is working with a fair degree of satisfaction, with the possible exception of the immigration of so-called Japanese 'picture brides' to the United States." And in concluding the letter, Mr. Phillips says : "The number of Japanese wives coming to the United States is undoubtedly increasing but the authorities who have in charge the administration of the immigration laws have not found that the Japanese government is violating the agreement." Thus we find officials whose duty it is to know, and who have every means of knowing, stating in substance that Japan has kept the terms of the gentleman's agreement. Furthermore, the congressional committee on immigration and naturalization has just concluded a series of hearings in California and, Washington in which every phase of the Japanese situation was fully investigated and, during these hearings at which the most prominent anti-Japanese workers appeared and testified under oath, not a particle of proof, or a scintilla of such evidence as would be accepted in a court of justice, did I hear or find to show that Japan in any instance had violated the terms of this agreement. What must be the significance of this failure to furnish proof ? What must it mean ? It must signify and it must mean, it seems to me, that no proof of Japan's violation of the gentleman's agreement was furnished BECAUSE NO SUCH PROOF EXISTED ; BECAUSE NO SUCH VIOLATIONS HAD TAKEN PLACE. And it would seem to mean, also, that another of the grave charges made against the government of Japan had been predicated not upon fact but rather upon ignorance and misunderstanding.

The problem arising out of the Japanese question is a serious one. A satisfactory solution of it is greatly to be desired. But no solution satisfactory or lasting can result from an agitation that finds its chief inspiration, I believe, in race prejudice and intolerance or from a consideration that is not preceded by and based upon the fullest and fairest investigation. There has been altogether too much of a tendency upon the part of those opposing the Japanese to exercise snap judgment in the matter, to make statements without thorough investigation. Some individual, sincerely interested and no doubt desirous of giving aid to the settlement of the problem, spends three or four weeks in Japan and returns to assert a deep and fundamental understanding of the whole Japanese question, and to warn that there is grave danger of the Japanese presently overrunning the whole of America. Some other individual proceeds leisurely down through California to the Mexican border and then announces, without submitting anything by way of definite proof, that thousands of Japanese are being smuggled into California with the connivance of the Japanese government, and that if California and America are to remain white the Japanese must go. And then other individuals, whose sincerity in the premises I am not here questioning, take alarm and map out a campaign to secure legislation to exclude further Japanese from America, and to deny the fruits of their toil to those already here and the right of citizenship to their American-born children. It seems most unfortunate that this kind of activity should characterize California's contribution to the solution of the Japanese problem.

* * *

The Chinese Eastern Railway

By Shao Ying T. C. Yeh

(Out of the mass of publicity matter circulated in the United States by the Chinese delegation during the Washington conference, the following presentation of China's side of the case in the matter of control over the Chinese Eastern Railway is of special interest and value).

THE construction of this railway was undertaken in pursuance to the agreement reached between the government of China and the Russo-Chinese Bank in 1896. Under the provisions

stipulated therein, it was agreed that "China and Russia establish a company to be called the Chinese Eastern Railway Company to construct and manage this railway." "The shares may be bought only by Chinese and Russians. In the imperial sanction given to the Chinese envoy empowering him to negotiate the matter, the company was accorded concessions, privileges and facilities, in return for which the company was to pay to the Chinese Government five million treasury taels on the day the line is completed and traffic commenced." The line was to remain the property of the company for eighty years from commencement of traffic, at the end of which it would revert to the Chinese government without payment. China is given, however, an option to take it over at the end of thirty-six years on payment of all capital, debts and interest owed by the company and undistributed profits, if any.

During the disturbances of 1918, allied forces were sent to Siberia to maintain order and assist in the evacuation of the Czecho-Slovaks there. To facilitate the evacuation, and inter-allied commission was created to take over the administration of the line. This arrangement provided for a technical board and a military transport board comprising of a representative from every nation that had a force there,—including one from the Russian government, which issued a declaration in approval of the arrangement—Both in this declaration and in the one issued by the allied representatives, emphasis was laid on the fact that, in doing so, it only intended to facilitate and improve the railway, and no violation of Russian sovereignty was contemplated. Although stipulation was made for the dissolution of this body upon the withdrawal of the allied forces, the railway is still under its management to-day.

A careful study of the relation between the company and the Russian imperial government clearly shows the political rôle of this railway with the inevitable disadvantageous results to its commercial standing. The losses were at first made good by the funds of the Russian government, but when the Bolshevik *coup d'etat* did away with the board of directors of the company at Petrograd, it was deprived of the only financial prop on which the company has been relying. The result was disastrous. This was further aggravated, first by the political interest of some of the directors such as General Horvath and Vice-Admiral Kolbchak, then by the enormous depreciation of the rouble and lastly, but not the least, by the struggle of the various political factions in Eastern Siberia and the consequent disorder along the line, a natural result of guerrilla warfare.

Such strifes were not only detrimental to the Russians themselves but were gradually affecting the safety of the Chinese. China suffered under this state of affairs as long as it was compatible with her own duty towards her subjects. The time came at last when any further inaction on her part would endanger her own security, and after consulting her allies she joined them in sending an expeditionary force into Siberia to assist in maintaining some sort of order there.

When the inter-allied commission came into existence, China opposed the inclusion of the Chinese Eastern Railway under its administration. The protest, however, failed to have any effect.

The reasons on which China based her claims for the sole administration of this railway can be summarized as follows:

(1) The line is on Chinese territory. The lands through which the line runs and the adjacent land are grants to the Chinese Eastern Railway Company by the Chinese government, free of charge. It is, therefore, only just that its administration by any other party besides Russia, to whom China is bound by treaty, can only be interpreted by China as derogatory to her territorial integrity.

(2) China is one of the two principal shareholders. By virtue of the agreement of 1896, "Russians and Chinese only can be shareholders." As a matter of fact, the Russo-Asiatic Bank remains the sole shareholder of this company with the exception of very few individual shares. But this bank is a joint Chinese and Russian concern, the former having subscribed and paid up the sum of Tls. 5,000,000.

(3) China is a creditor of the company. According to the agreement of 1896 the company was to pay to the Chinese government the sum of Tls. 5,000,000 in return for the land granted to the company by the Chinese government. This, for some reason or other was never carried out, and together with interest it now amounts to something like Tls. 11,000,000.

(4) By the agreement of October 2, 1920, signed between the Russo-Asiatic Bank and the ministry of communications, it was stipulated that, pending an agreement between the Chinese government and the future Russian government recognized by China, China will assume the control over its administration in order to give it efficient protection. China therefore, is in honor bound to make good the promise she has given to the bank.

(5) Since the Chinese assumed control of the railway its financial conditions have been greatly improved. Instead of relying upon Russian government subsidies to make up its enormous deficit as had been hitherto the case, the revenues and expenditures are now almost balanced.

In claiming administration over this railway, China is not only actuated by her own interests but also by consideration for the welfare of the company. This can be easily proved by a careful study of the agreement of 1920, a provisional understanding pending the constitution of a recognized Russian government. It contains no special derogations of the statutes of the railway company as of the 1896 contract, which were confirmed. To guard against possible abuse it contained a special clause confining the activities of this line to those of a purely commercial character. All these facts demonstrate clearly that, beyond protecting her own and the company's interests, China has no intention to take advantage of the present Russian situation, although it would be quite justifiable, seeing that the Tls. 5,000,000 to be paid by the company stipulated in the original agreement was never paid up.

As soon as a stable government is established in Russia that can take over the rôle now forced on China, negotiations for a settlement will no doubt be arranged at the first favorable opportunity. The matter in short, is one between China and Russia and to be settled between these two countries when China can find a recognized government to deal with in Russia. That this is clearly acknowledged by Russia herself can be seen from the aforesaid agreement.

It may be added here that the inter-allied commission was called into existence by reason of military exigencies. Now that all the allies except Japan have seen fit to withdraw their forces, it has outlived its usefulness. Why not dissolve it and prove to the Russians as well as the Chinese the good faith of the allies as stated in their declaration in 1918? To the Russians, this will mean the fulfilment of a promise eagerly awaited; to the Chinese, its termination will mean the ending of what has always been considered a gross violation of their administrative integrity and territorial sovereignty.

In view of the above considerations, China is prepared to bear on her own shoulders the whole burden and responsibility of continuing to maintain the efficient administration of the railway as long as Russia is not in a position to do her share. Any interference on the part of others will be, therefore, not only unjustifiable, but detrimental to its continual smooth working. We have not the slightest doubt that such a course of action will be met with the disapproval, not only of the Chinese, but also of the Russians, whose interests China is bound by treaty to uphold and protect.

SHAO YING T. C. YEH.

* * *

The latest financial report of the Chinese Eastern Railway under the presidency of Dr. C. C. Wang, indicates that the financial stringency of the line has been much eased owing to payments made by the various powers for services rendered during the war and post-war period. In effect, the railway showed a net profit

of more than $2,000,000 for 1921 after paying for many improvements. According to the latest reports, the amounts owed by the powers to the railway are as follows:

Country	*Original amount owed*	*Outstanding*
Japan.. ..	$6,544,249	$247,874
Great Britain ..	358,016	48,565
U. S. A.	659,310	91,451
(American merchants)	469,376	469,376
France	452,690	452,690
China	182,177	182,177
Italy	56,759	10,115
Czecho-Slovakia ..	3,477,650	3,477,650
Others	273,334	273,334
Total ..	$ 12,473,561	$5,253,232

* * *

The Value of an Ounce of Gold?

IN 1913, Dr. Sun Yat-sen damaged his political career in China by advocating a currency scheme guaranteed by merchandise and the products of the country stored in government warehouses. Overnight, he fell from the pinnacle of fame into a padded cell. Ten years later, the total gold reserves of the world are computed at $5,000,000,000, of which, sixty per cent. is in possession of the United States with the inter-allied nations in her debt to the tune of $19,000,000,000. With the gold mines of the world closed down because it is now unprofitable to work them, and with only about a dozen mines with ore reserves ahead of them for twenty years, with the United States draining the world of its gold in payment of debts, the question must arise of how these debts are to be paid. Obviously, if they cannot be paid in gold, if paid at all, they must be paid in commodities, which in turn must have a fixed value.

Now comes Thomas A. Edison and asks the simple question: "what in your opinion would be the approximate market value of a troy ounce of pure gold if all the governments of the world should demonitize it ? "

What is the answer ? What regulates the price of gold ? The current belief is that gold is subject to the law of supply and demand the same as other commodities, or that an ounce of gold is worth a certain price because it costs just so much to produce it. The price of pure gold is $20.67 per troy ounce, simply because the nations of the world have fixed that price as standard. Nothing more, nothing less. Gold in itself is the most worthless of all metals, its value being limited almost entirely to monetary and ornamental purposes. In 1492, the year America was discovered, the total stock of gold in Europe, in plate, jewelry and coin was estimated at about $600,000,000. Since the discovery of America, about 18 billions of the yellow metal have been added to the reserves of the leading nations of the world. Of this amount fully one half was plundered from the nations of the new world in the fifteenth and sixteenth century. Of the total amount, less than one half exists to-day. Every ounce of gold in the world has cost a human life. During the last ten years, the annual gold production of the United States has been reduced fully fifty per cent. What has an ounce of gold cost ? More than it is worth in dollars, besides untold cost in human blood and tears.

If Europe is steadily drained of its gold reserves, with no money acceptable to the United States except at ruinous rates of exchange to pay for the things bought from us, with no credit for the supplies and materials she needs, unable to pay what she owes, in many cases not even the interest due, how can America sell her surplus and Europe buy from America. America has too much gold and Europe has not enough. Yet America demands more and more gold in payment for her commodities, and Europe is unable to buy, with the consequence that we are passing through a business depression as acute as that which exists in Germany. America is suffering more than Europe is. The whole world is thereby financially disarranged.

If is is impossible to settle the debts of the world with gold, why should not money or credits be based on "capital goods," land, industries, mines, as well as gold reserves ? Why should not the bonds or guarantees of a nation be as good as the nation itself, that the "will to pay" as well as the ability to produce goods of value, be acceptable as gold in settling these debts ?

The United States has sixty per cent. of the gold reserves of the world but is suffering from an acute stagnation of business. If large gold reserves mean prosperity then not a man should be idle in the United States. Germany, with depleted gold reserves and billions of paper money has less idleness than the United States. If mere volume of money means prosperity, then Russia should be enjoying the "golden age." How can the nations of Europe reduce their paper issues without demoralizing their industries and how much gold would be required to stabilize Europe's paper issues, and, what is more important, where is all this gold to come from, when it is all flowing one way ?

There may be a solution to this world problem along lines that will maintain the gold standard, but we fail to see how it is to be brought about unless the United States is willing to accept cancellation of some of the war loans or some rearrangement that will shift the load from Britain and France on to her own shoulders. We are approaching the time when the ideas of Dr. Sun Yat-sen may have to be seriously considered as the only way to bring about world stability, in which commodities, merchandise, natural products, necessities of life, etc., will serve as a basis of values. For if Europe is to pay at all she must pay in trade. If this is so, America and the neutral nations of the world must suffer through business depressions.

* * *

International Good Manners

"IT is our duty to so direct the foreign relations of our country that the power of public opinion shall be for peace. More quarrels have come from insults than from injuries," declared Eliju Root in his San Francisco address. *The New York Times* editorially takes up the advice of this sane old American statesmen, and says that "behind and superior to formal diplomacy and official negotiation between governments, the condition precedent of a successful working of the best-devised machinery for composing international controversies and averting war is the will, the steady purpose, of each people to maintain peace, so far as possible. As Mr. Root said in his San Francisco address: 'It is our duty so to direct the foreign relations of our country that the power of public opinion shall be for peace.'

"The old dynastic, intriguing, conscienceless diplomacy is gone for the most part. The more "open" form that succeeds it may be made less powerful for good by the violence of public men and newspapers that roar and rage for their own purposes against some foreign nation or nations. So far as these continuous discharges of suspicion, hostility and falsehood have their effect, they beget or increase at home a misinformed and embittered feeling which is responded to abroad by a quickened and growing and dangerous resentment.

"In the close intercommunication and interpenetration of modern states, a wealth of disputes, misunderstandings, claims and counter-claims is inevitable. They can be settled amicably in the spirit of conciliation, compromise, friendly give-and-take. Representatives of the nation can get together "to talk things over," as Mr. Root says. "If there is a controversy, the most important thing is to get some one to change his mind." Meanwhile, all the purple-necked orators and organists of ill-will have been doing their best in both countries to create an inflamed state of the public mind. They are a minority, but in each country the influence of the rancorous faction in the other is apt to be overestimated.

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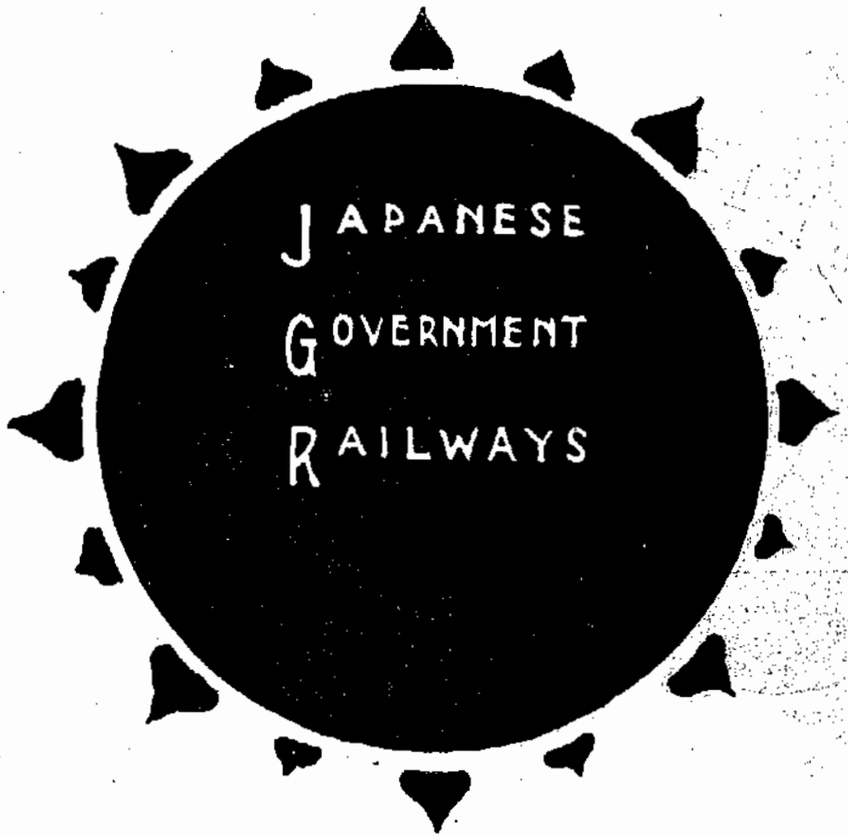

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SHANGHAI, PEKING, TOKYO AND MANILA

A. L. TAYLER.

Sun Yat-sen

MALIGNED, slandered, misrepresented and hounded by a bitterly hostile press, Dr. Sun Yat-sen, the exponent of Chinese liberalism returns once more to his house in Shanghai, the victim of base treachery on the part of a swash-buckling militarist who stabbed him in the back, usurped his position and forced him to retire from Canton. The propaganda directed from Peking which has lauded Wu Pei-fu to the skies and denounced, defamed and abused the leader of Chinese democracy, has accomplished its purpose. Treason, ingratitude and disloyalty have been extolled as patriotic virtues in order to justify the betrayal of the man who stood in the path of Wu Pei-fu's ascension to the post of dictator.

It is difficult to understand what is behind the campaign to destroy the usefulness of China's foremost liberal. The defamers of Dr. Sun Yat-sen concede his honesty of purpose, his integrity and unselfishness. What higher qualities are desired in a political leader? Is there another outstanding figure in China of whom the same can be said? If there is one thing above all others needed in the reorganization of the Chinese government, it is HONESTY. Better an honest and untried executive, than an experienced grafter.

Is Dr. Sun an idealist? Does he incline to socialism? Has he a swelled head? Does he talk big? Well, there are, and have been in the past eight years, leaders that the western world has placed high on the pedestal of fame, of whom all these things can be said, and more. Dr. Sun is not alone as an idealist, he is not the only leader with socialistic tendencies, there are others who have communed alone with the Almighty and thought the future of the world rested in their care. Is Dr. Sun impractical? The accusation that he is, dates back to his railway scheme which failed, not because of Dr. Sun's inexperience, but because of the meddling in China's affairs by impractical, idealistic and swell-headed foreigners. No honest financier or engineer has ever called it impractical.

What then, is the matter with Dr. Sun Yat-sen? He is "a revolutionist," the "Mazzini of China," a "stromy petrol of politics." Admitted. But we add that any self-respecting Anglo-Saxon true to his blood and traditions would also have become a confirmed rebel against conditions such as have prevailed in China since Dr. Sun handed over the republic he founded to the arch-militarist, Yuan Shih-kai, the father of the present system of unbridled graft and oppression. For much less provocation violent revolutions have broken out in other countries.

When, in heaven's name, is rebellion justified, if not in the face of present conditions in China? How long must a people see their constitution fluoted and trampled upon? How long must they bear the yoke of a military despotism before rising to assert their rights? The time must come when some leader will arise and if necessary call in foreign assistance to restore the liberties of the nation, even as the people of England invited William of Orange to save them from the despotism of James the Second, and the American colonists accepted the aid of France in order to preserve their liberties against the oppression of George the Third. Is Sun Yat-sen to be condemned because he has exercised that right to rebel which becomes the duty of all right-thinking and honest men when deprived of their liberties by despots?

We hold to the conviction that if the constitution is to prevail in China, if a duly elected parliament is to function and the armed forces of the nation subordinated to the civil power, then this great step forward along the path of liberal government will never be taken by a dyed-in-the-wool militarist. If democracy is to triumph, if peace, happiness and justice is to prevail in this unhappy country, it will come only through the sacrifices of some idealist, some constitutionalist, revolutionist, some Mazzini, that history will call a great patriot. That honor we firmly believe is in store for Dr. Sun Yat-sen.

We know these opinions are unpopular in China, but we also believe that once the propaganda against Dr. Sun is terminated and people permitted to get a proper perspective on all that he has accomplished, that justice will be meted out to him. To our mind, despite all his shortcomings, all his errors—and they are many—he stands head and shoulders above the leaders of the Peking mandirinate whose inefficiency, corruption, self-seeking and trampling upon the rights of the people has fully justified his various attempts to restore parliamentary and popular government.

* * *

The Effect of Civil War on China's Railways

(Contributed)

CHINESE commanders cannot or will not understand that single line railways have to be run with the greatest care to avoid accidents, and it is little short of a miracle that they have so far had none as a result of their playful habit of running successive trains without staff or tablet.

Of the above statement, which appeared in local press report, it may be said that the half was not told, that the Chinese general is not so much at fault as his underlings, and that the extent of the miracle is not confined to insane infringements of traffic regulations.

The high officer in the present war has given every assistance to ensure proper working of the traffic, but generals or officials of sufficent rank cannot be stationed at every wayside station whose proper supervision is vital to proper operation of the line. Even if China were not a stronghold of nepotism and a prey to the sinecure holder, delegation of authority to men of deficient education and intelligence is inevitable at present. The bucolic relatives of the country-bred concubine and the sophisticated by heavy-eyed decadent who owes his position to "services rendered," are not calculated to make efficient railway traffic officers.

The railway machine itself suffers from the same defects. Only the foreign traffic official can flourish Chang Tso-lin's or Wu Pei-fu's visiting card in the face of the man with the Mauser pistol with any hope of success in argument. You can be armed with a proclamation signed by the Lord of All threatening death to the disobedient, and yet fail to eject three coolie soldiers from as many cars which have been converted into convenient bijou residences for a period of weeks.

In an army where mobility of responsibility is thoroughly understood and only a very local obedience is exacted, the written word is of no avail. You are only shot at dawn if the displeasure of your immediate overlord is incurred. Thus it is, that regulations are tolerated when there is no special urgency and thrown to the winds at times of stress. In retreat, or at times of urgent concentration trains are run on single lines at dangerously short intervals, entailing the suspension of all traffic in the opposing direction. Then, when the inevitable congestion occurs, some gilded one cries, Hold! Afterwards, long afterwards as time is measured in the west, the railway undergoes a period of convalescence, during which the clotted rolling stock (the two-mile long processions of engines and cars) is broken up and reshuffled, not for the use of merchants on the brink of ruin, but to await the pleasure of the fickle-minded militarist who clings to it as he does to life or the pay of his men. This reorganization is perhaps carried out in the intervals between the local commander's naps when opium's wondrous dreams would be disturbed by the shunting of his saloon car, which, in all probability, blocks the main line. At length the railway creeps back to the anaemic life of perhaps a train each way per day, all that is possible with war's demands on rolling stock.

A railway is not generally considered a very fragile piece of mechanism. Nevertheless it demands common sense attention to avoid disaster. Thus drivers and firemen must have rest, a hot axle brooks no neglect, it is manifest unwisdom to grossly overload a car with ammunition, and still greater foolishness to marshal that car near an engine or next a fodder laden car on which cigarette-smoking soldiery loll at their ease. Yet these and many

other obvious precautions are wilfully neglected unless a foreigner observes them and insists on attention. That providence which protects the ignorant and incapable has miraculously befriended the Chinese armies. Their luck should become proverbial.

One would think the soldier incapable of doing much harm to the open cars in which he usually travels. However, he does his best, by cutting away the sides when doors are not wide enough for his needs, or by making firewood of the doors, while he elects as a rule to light his cooking fires on the top of a fuel laden car.

Occasionally the soldier revels in the superior comfort of a coupé car with upholstered seats. The trouble may start with the investigatory bayonet, or the wrench at parting with his comforts. The result is always the same; most of the car goes with him. The leather covers, the horse-hair stuffing of the seats, all brass hooks, ash trays and rack rails accompany him. He even attempts to pick the expensive plate glass windows out of their frames, and invariably smashes them in the hastiness of ineptitude or the rage of frustration. The car is left a smoke and grease begrimed shell, filthy in the extreme, verminous, redolent with the rancid oil of meals either cooked on the coupé floors on primitive charcoal stoves, or even on a chimney-less brick stove erected on a linoleum floor. Who is to blame? Certainly not the soldier, who brings with him the primitive habits of the dank, dark hovel on whose never cleansed mud floor he once wallowed with the family pigs and a bundle of evil smelling rags afflicted with a Job's collection of skin diseases for which dirt alone was responsible. Naturally he pockets everything that is portable or strange with a view to its sale or conversion into something to serve his simple needs. The bull in a China shop is not more expensive or more out of place than the coolie soldier in the luxury of a modern passenger car.

The financial effect is even worse. The earnings of the Peking-Mukden Railway in 1919 amounted to some $1,600,000 (£200,000) per month. The railway has been practically paralysed for six weeks. Moreover, its earning power has been greatly reduced for an indefinite period. Something like one-quarter of its revenue is derived from the carriage of some four millions tons of coal annually from the mines district to the sea. The rolling stock is therefore principally concentrated in this area. Chang Tso-lin in his retreat, took with him into the comparatively unproductive Manchurian regions, 120 main line engines out of a total of 140 and the bulk of the rolling stock, thus leaving the mining area in a hopeless position as regards transport. Of the 10,000 or more tons which can be produced daily, the railway can now move only 2,000 tons if unhampered by troop movement. The mines are thus compelled to pile up output as long as storage space is available and then close down until-long-drawn-out negotiation secures the return of locomotives and wagons which will than need a further idle period in the shop before being fit for service.

Further, there has been the usual top-to-bottom reorganization of government by the victorious party, in which well-tried permanent officials have been supplanted by new men. This, of course, cannot fail to have its effect on the machinery of railway administration. The permanent official is an unavoidable part of efficient management. Office lore, the wisdom of experience, a knowledge of the files, and the dusty contents of pigeon-holes, are very necessary when these repositories were until recent times the haphazard holes of a mud-walled palace.

Railways protected from war damage by treaty are somewhat of an anomaly, but this is the case as regards the Peking-Mukden Railway within the province of Chihli. By the railway agreement incorporated in the protocol of 1902, China is forbidden to keep troops within certain specified areas, must confine hostilities to a zone distant at least two miles from the railway and not damage the line as to cause traffic interruption for a greater period than 48 hours. Further prolonged suspension of normal traffic is forbidden between Peking and the sea, and to ensure this, a train under the protection of the troops of the treaty powers circulates in this district.

With the exception of an ineffectual attempt to blow up a bridge these somewhat exacting conditions have been observed with care, but a tremendous amount of minor damage has occurred, while trenches have been dug right up to the tracks an infringement of treaty conditions as regards war area limitation.

The war has reduced the number of military autocrats by one which is a step in the right direction, but he would be bold who would prophesy the dawn of that era of profound peace and rigid but wisely directed economy which is absoultely necessary for China's regeneration.

* * *

The Diplomatic Status of Famine Relief

By Laurence Impey

IN the first place it is necessary to consider the origins and presumable intentions of famine relief, past and present, in relation to its uses in China. In the past it may be said with every appearance of truth that the funds raised for famine relief came from purely exterior sources and were in the minds of the donors to be devoted to direct famine relief, that is, the provision of food and clothing for the absolutely destitute.

It has gradually become apparent to those on the spot that this is a mistaken principle to apply, inculcating, as it does, the lesson of pauperism and in its place, there has been developed the theory of labor-giving relief. This is well illustrated in the famine of 1920-1921, in which I was myself employed, where the American red cross China famine relief and the international famine relief committee were both at work in the same field, one employing the theory of more or less free relief and the other giving no relief except for work of national importance carried out, on one of their construction schemes. By this time, however, the sources of the funds used, differed from those of the previous famine eras and it is necessary to consider these sources next.

The American red cross funds, as of old, came purely from outside and were thus entirely at the disposal of a foreign committee, which decided to have them handled entirely by foreigners and on a constructive basis.

The international funds, on the other hand, were partly from foreign sources, partly from foreign and Chinese subscription in China and also partly from funds allocated from a surtax on the customs and on the telegraphs, Chinese organizations, though in one case under foreign and diplomatic control. Therefore it may be argued, not unnaturally, that the Chinese should have some say in the expenditure of these funds and this was in point of fact allowed for by the election of a joint committee to the international famine relief. This, then, obviated any difficulty as far as they were concerned, during the period 1920-1921.

To consider next the position of the red cross, which had a scheme of road construction in several of the provinces, the expenditure on which amounted to something like $2,000,000 in all. This road construction was work on which the greatest number of famine sufferers or unskilled labor could be employed and it was chosen for this reason in preference to other schemes which were put forward. It was, however, necessary that a right of way for the construction of the various roads should be obtained, before work could commence, and it was obvious that the American red cross could not use foreign funds with which to purchase land in Chinese territory.

This difficulty seemed a very real one at the outset, but it was overcome by agreements made with the provincial governors on behalf of their provinces that certain Chinese funds should be allocated to this purpose and that all land required should be measured and purchased by agents and representatives of the civil governor.

I think I am right in stating that in neither of the two provinces in which I was personally working was this agreement carried into effect and I know that up to the time of the closing of the work in

大正七年七月十日第三種郵便物認可

PERICLE CINERI

Reversing Rudders
page. 563

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

上海仁記路第五號

遠東時報

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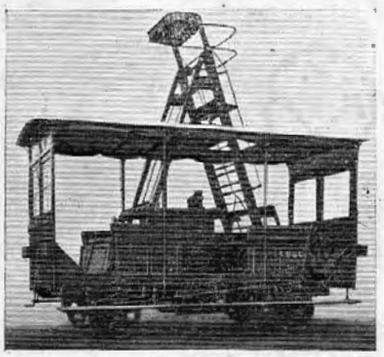

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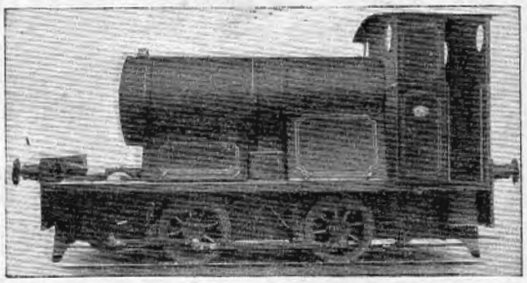

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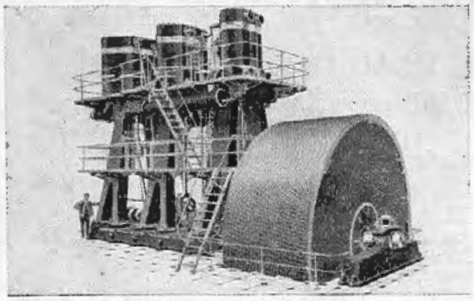

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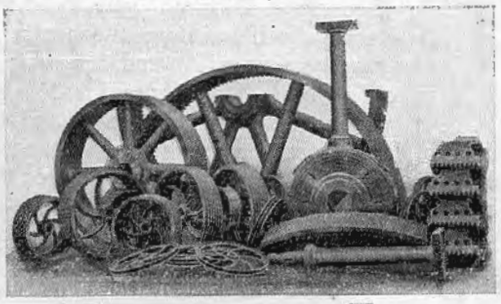

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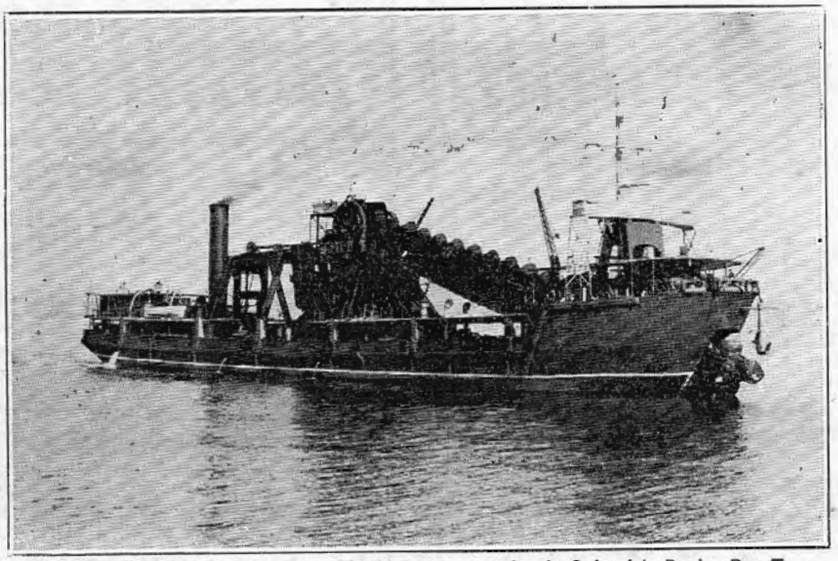

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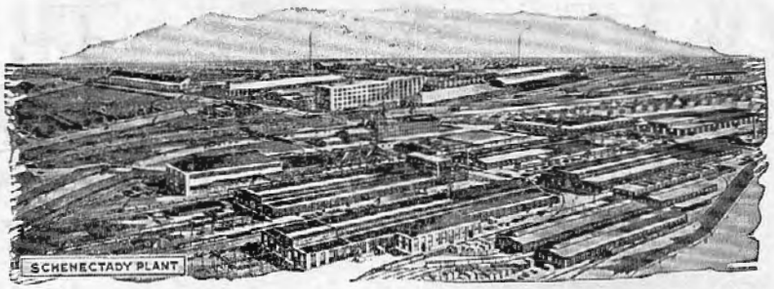

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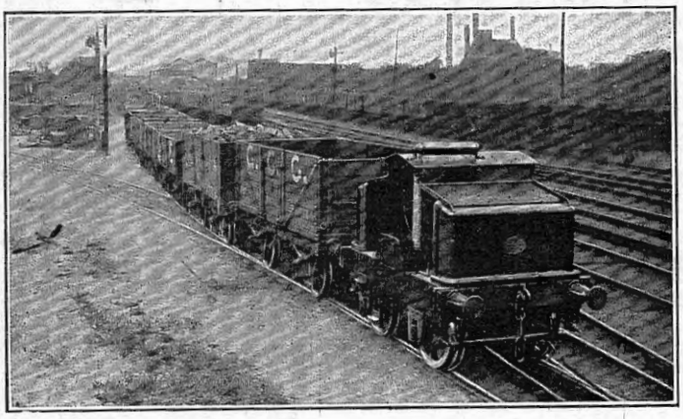

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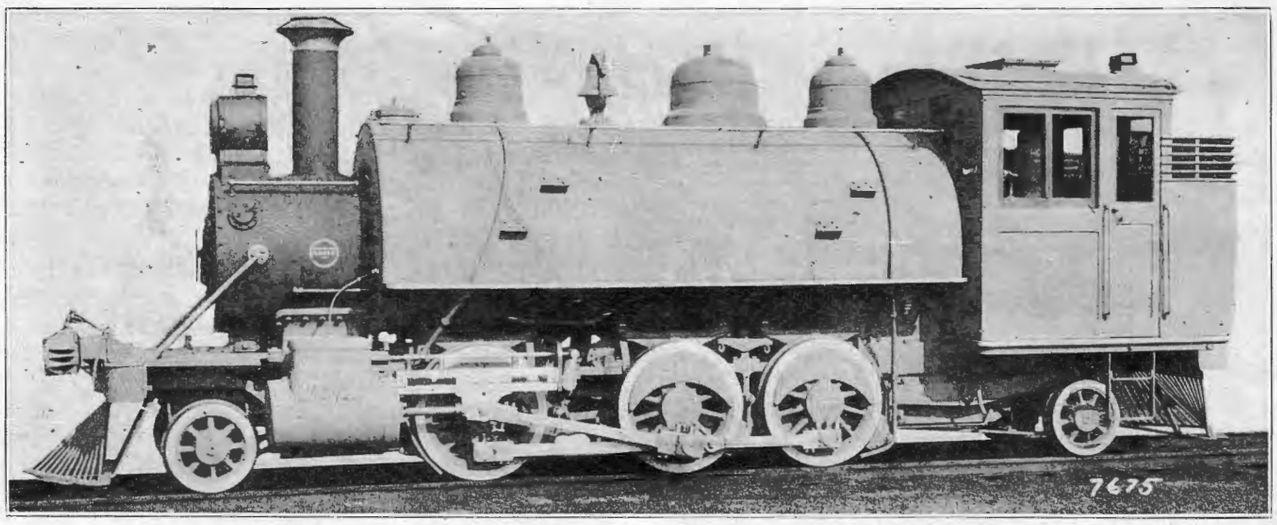


"Prairie" Type Switching Locomotive for the Peking-Suiyuan Railway, built by the Baldwin Locomotive Works

Switching Locomotive for China

THE Peking-Suiyuan Railway which taps China's great northwest has now about 400 miles of standard gauge (4-ft. 8½-in.) track open and is one of China's most important railways, from both political and industrial standpoints. The line was constructed entirely with Chinese capital and by Chinese engineers, having been originally conceived by Dr. Chan Tien-yu, better known to foreigners as Jeme Tien-yu.

Construction was started in 1905 under Dr. Chan, on the Peking-Kalgan section. In 1909 public service was begun. This section of line, about 122 miles long, is without doubt the most remarkable piece of railway engineering yet carried out in China. The tunnel under Nankow pass is the longest yet bored in China, its setting being extremely picturesque, and is yearly visited by thousands of tourists.

In succeeding years, construction of the line from Kalgan to Suiyuan proceeded and on May 1, 1921, the railroad was opened as far as Suiyuan, the first train being hauled by one of the Baldwin locomotives herein described, of which 17 are now owned by the Railway, four having been purchased in 1910, three in 1919 and ten in 1920.

Locomotives of this type are peculiarly adapted for switching, general utility and construction service, being a self-contained unit and having a short rigid wheel-base which, combined with the guiding and supporting features of front and rear trucks, makes the locomotive safe to operate in either direction on light rails and over short radius curves.

The photograph herewith shows one of the ten locomotives which were ordered in May, 1920, with a request for early shipment. In October of the same year the engines were on their way to China.

These locomotives are designed for ruling grades of one per cent. and have a straight top boiler and a steel firebox. The piston valves are actuated by Stephenson valve motion and controlled by a screw reverse gear. The brakes are of the Baldwin steam type schedule U. 6. In common with the practice on Chinese Government Railways, M. C. B. automatic couplers are employed. Other special equipment includes Coale safety valves, Ashcroft steam gauges, Baldwin water gauges, Monitor injectors, oil headlights and Nathan double bulls-eye lubricators.

Gauge	4′ 8½″
Cylinders	16″ × 24″
Valves	Balanced

Boiler

Type	Straight top
Diameter	50″
Thickness of barrel sheets	½″ 9/16″
Working pressure	180-lbs.
Fuel	Soft coal

Firebox

Material	Steel
Staying	Radial
Length	60 7/16″
Width	34⅜″
Depth, front	57 1/16″
,, back	53″
Thickness of sheets, sides	5/16″
,, ,, ,, back	5/16″
,, ,, ,, crown	⅜″
,, ,, ,, tube	½″

Water Space

Front	4″
Sides	3″
Back	3″

Tubes

Diameter	2″
Material	Steel
Thickness	No. 12 W. G.
Number	152
Length	13′ 6½″

Heating Surface

Firebox	90 sq. ft.
Tubes	1,071 sq. ft.
Total	1,161 sq. ft.
Grate area	14.4 sq. ft.

Driving Wheels

Diameter, outside	44″
,, centre	38″
Journals, main	7″ × 8″
,, others	7″ × 8″

Engine Truck Wheels

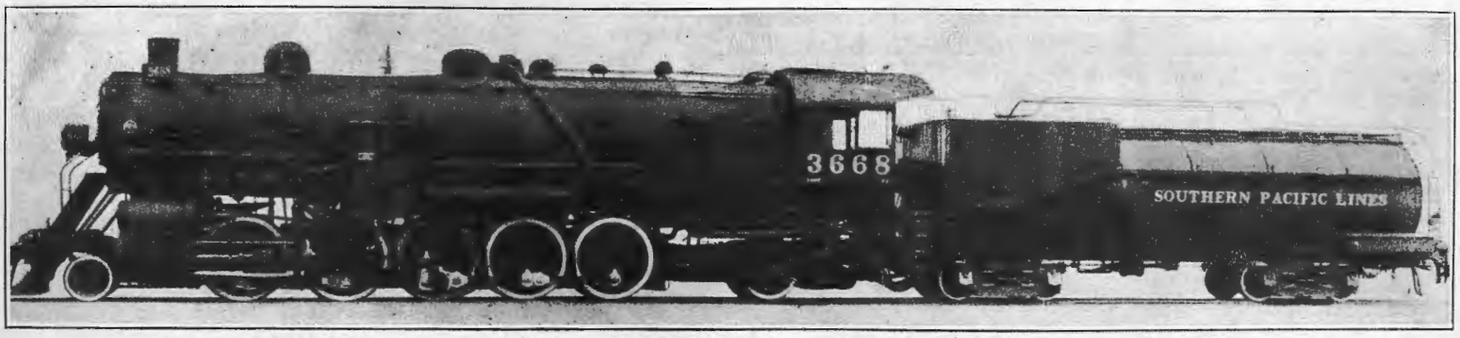
Diameter, front	28″
Journals	4¼″ × 7½″
Diameter, back	28″
Journals	4¼″ × 7½″

Wheel Base

Driving	10′ 0″
Rigid	10′ 0″
Total engine	25′ 9″

Weight

On driving wheels	87,850-lbs.
On truck, front	11,250-lbs.
,, ,, back	14,000-lbs.
Total engine	113,100-lbs.
Tank capacity	1,600 U.S. gals.
Fuel	5,000-lbs.
Service	Switching



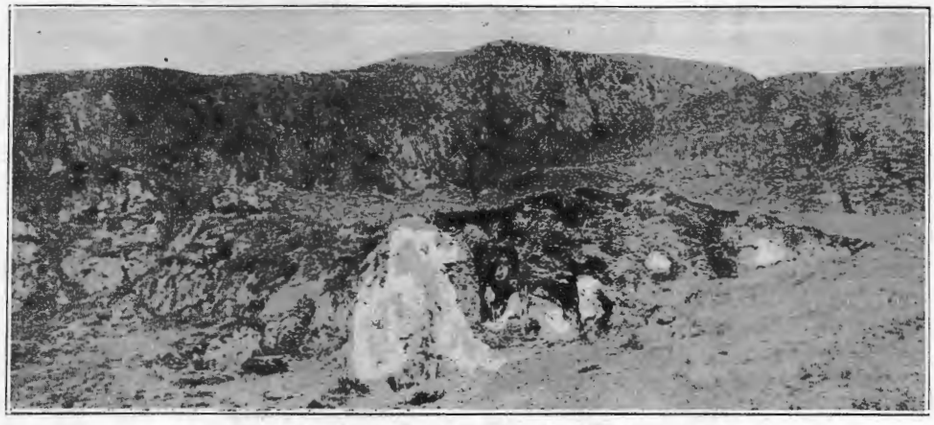
Fifty of these Santa Fe Type Locomotives Just Built by The Baldwin Locomotive Works for the Southern Pacific Lines

The Kochiu Tin Mines

KOCHIU, a city of about 130,000 inhabitants located in the southwest corner of the province of Yunnan, is the centre of China's tin mining industry. It is reached by the Yunnan Railway from Indo-China, the traveler alighting at Mengtsze and proceeding by chair or pony across the mountains to the tin fields, located for the greater part near the tops of the mountain ranges enclosing the valley of Kochiu. The largest of these mines, ten miles east of Kochiu, is the Ma La Ko, then comes the Huang Mao San and about 100 others of varying extent and outputs. Not long ago the well-known firm of Shewan, Tomes & Company installed a pumping plant to furnish one of the larger mines with water. Their engineer, Mr. William Semple, on his return to England, read a most interesting paper on the "Kochiu Tin District" before the institute of marine engineers, from which the following up-to-date data is abstracted. Mr. Semple says:

General View of Kochiu City, Yunnan province, the centre of the largest tin mining industry in China

"It is difficult to get any information as to when the tin mining really started, as no authentic records seem to have been kept, and the only data I could find were on a tablet in one of the temples, which gives the date as about 400 years ago. All the mines are situated on the tops of high mountains or in the gulches between them. From my own observation I find that alluvial mining was carried on extensively in the earlier years, the ore being plentiful and easy to get at. It is said by some of the old miners here that when mining was first started it was to obtain silver, and during prospecting the great tin ore beds were discovered, and the abundance of tin ore in this district is really remarkable. Although alluvial mining was carried on extensively the miners opened tunnels in order to search for a finer grade ore, and some of these extend into the mountains from 2,000 to 4,000-ft. from 3,000 to 10,000 men being employed. The largest mining firm here is the Yunnan Tin Trading Co., who are at present introducing a large pumping plant, the installation of which was the reason of my visit, to enable them to work the whole year round and supply sufficient water for ground sluicing on their open mines at Malaga Hill. The ore is earth ore, and when it comes out of the mines it is usually crushed by native methods, either by hardwood clubs or a stone crusher driven by water-buffaloes, then it is all hand-washed, the ore receiving about forty washings before it is smelted. The native furnaces are very interesting; they are built with mud bricks and have a little over a ton capacity. The air-blower, supplying air to the furnace, is native made; the barrel consists of a large piece of timber hollowed out and fitted with a piston, the air suction valves being of buffalo hide and the air discharge going direct into the bottom of the furnace. The whole apparatus is worked by manual labor, and it takes from eight to ten hours to make a cast; the smelted tin is run into sand moulds; the metal obtained runs from 92 to 99 per cent.

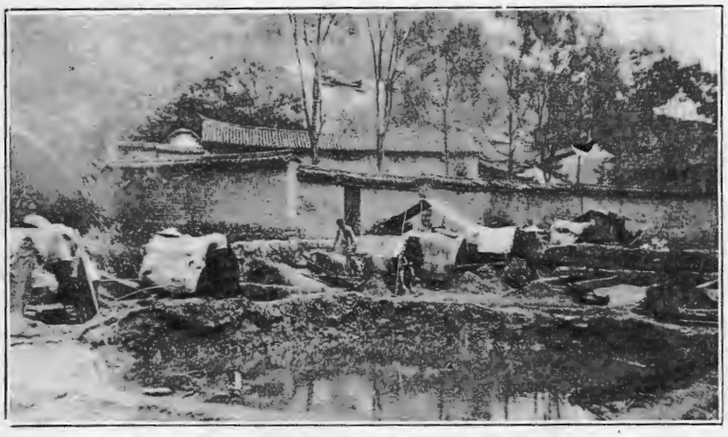


One of the Tin Mines located about 10 miles from Kochiu

"The Yunnan Tin Trading Co. have a large up-to-date smelting and concentrating plant, which was built by the Germans about ten years ago, and run by their own men. On the outbreak of war the Chinese took it over, and have never used it until quite recently, when they put it under an American administration, and when working fully it will handle 1,000 tons of ore a day.

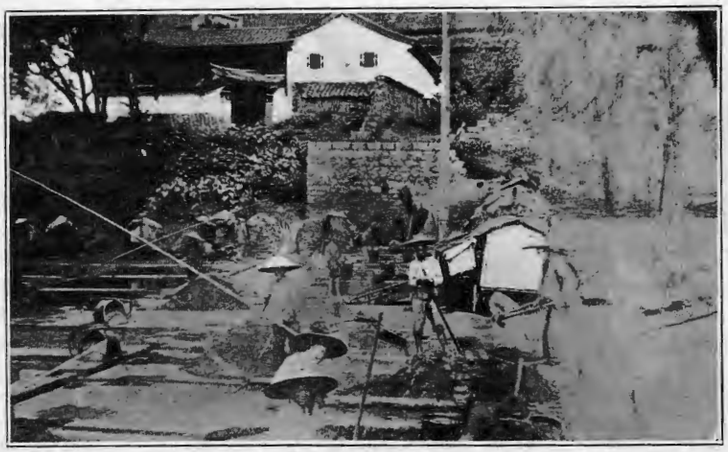
"The lay-out of the plant is very similar to other mining plants —that is, when the ore is brought down from the mines it is taken by elevator to the top floor, where it enters the large ball mill, and is there crushed to a 16-mesh, afterwards going to a secondary crusher, where it is graded down to 100-mesh; from there it flows down shutes to jig concentrators, where it receives its first washing; from there it flows down to the Wilfley shaking tables below, where it is further washed and graded, the tailings passing out to ponds for re-treatment later on. As regards the percentage of tin obtained from the ore, there was some doubt raised as to being able to make standard tin from the ore obtained at Malaga; the result was that the company brought out an expert metallurgist from America, who spent over three months sampling and assaying the ore, and he got some of the most marvelous results I ever saw. He showed me a sample he had taken from a large cast of tin bars he had made, and after

VIEWS IN THE KOCHIU TIN DISTRICT



Tin Ore Waiting for the first Washing

Tin Ore Washing Troughs



Washing Tin Ore in the Compound of the Kochiu Tin Trading Co.

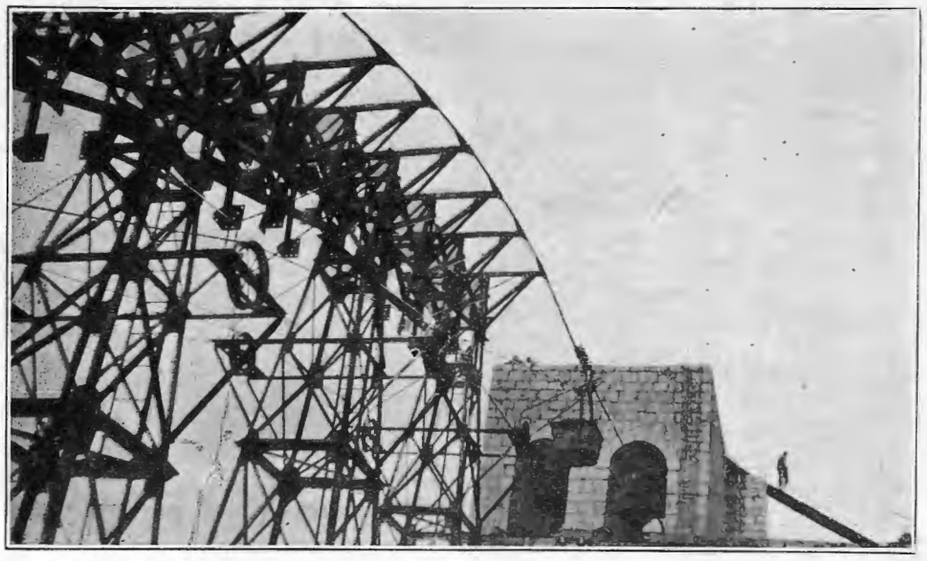
Washing Tin Ore

Washed Ore ready for the Smelter

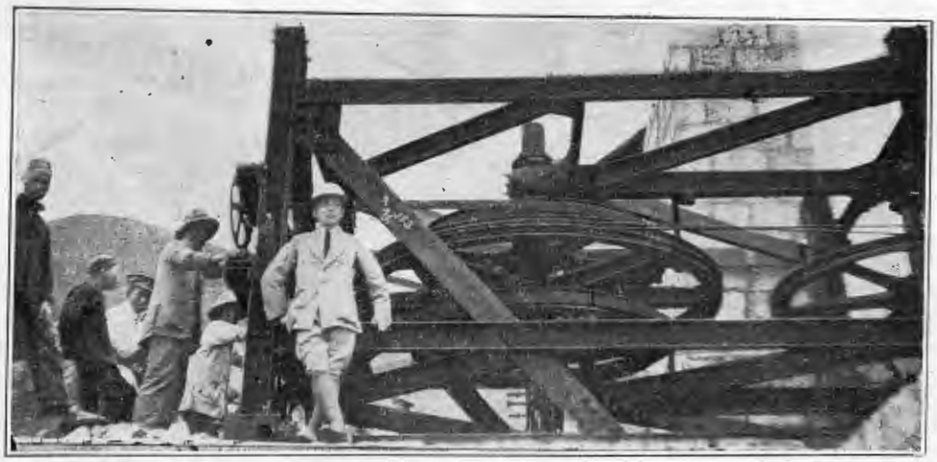
assaying them showed the high purity of 99 per cent., and he proved that standard tin could be made from these ores. He made out a complete set of plans for a new lay-out of their smelting and refining plant, which I understand they are going to put in next year. The smelting furnaces at present are on the Siemens-Martin principle, six in number, of ten tons capacity each, one gas generator supplying two furnaces. At present they only run two furnaces, averaging about two casts a day. The native furnaces are of the beehive pattern, and built of mud bricks and average two tons capacity, wood charcoal being used as fuel and the air blast hand-driven. These furnaces work very well, being easy to build and keep in repair.

"The conditions at the mines for boys and men are practically the same, and ventilation most inadequate, being absolutely devoid of fans. Whether there are any mining laws relative to this province I don't know; there must be, as there is a director of mines in Yunnanfu, but I have never seen them, the native methods of mining being used for centuries. However, the administration has all been changed this last year for the better, as many Chinese are educated in American mining colleges, and are quite used to the existing conditions. I understand they contemplate sinking a shaft 1,000-ft. deep to connect into the present mine tunnels at different levels, and also putting in a proper ventilating shaft with fans; also rebuilding all the housing quarters with well-equipped hospitals and medical attendance, which is much lacking at present. When these alterations are carried out it will be ideal for the miners, as they will then be able to work regular hours, and all the ore will be hoisted to the surface in mine cars and dumped into bins. At present, what

causes the high mortality among the miners is coming out of these hot channels dripping with sweat, carrying their loads of ore, and being very thinly clad the cold air simply catches them, and they develop lung trouble, which, if not checked in time, turns into tuberculosis, and once they get that they only last about a week. They have no set hours of work at present; just simply so many loads of ore to bring up, the average being five; over and above that they get a bonus of 10 cents a load. These loads for the men average 133-lbs., and for boys about half that, or according to their strength. So you can imagine what that means coming out of a tunnel 4-ft. square and 2,000-ft. long, the floor having an incline of 45 degs. and the ore dump about half a mile from the mouth of the tunnel. As far as I understand their wages average from 50 cents to $2 a day, according to their time of service. All the miners are well fed, but that does not compensate for the hard conditions they live under at present.



"The greatest trouble they have is in the refining of the tin, due to the percentage of lead and arsenic being high. Formerly it used to be shipped to Hongkong, and re-melted and refined before being put on the market, thus adding unduly to the cost. To overcome the difficulty they have engaged an American mining engineer, as well as a smelting specialist, to give attention to all the work near the mines and bring the tin up to the required standards to compete in the open markets of the world. Whether they will introduce modern methods of mining remains to be seen. I doubt very much if it would pay owing to the large overhead expenses in bringing machinery up the mountain, transportation being a very difficult and dangerous problem judging from my own experience in bringing the pumping machinery across. The cost of transportation alone was $40,000. This gives an idea of the very wide margin of costs firms have to work upon when doing business in this province. But when once the Chinese wake up to that fact with the possibilities of development, and put down good roads and make the interior safe for foreigners to live in (although they will certainly need foreign help to develop their resources and make conditions good generally all round), then the future of this province will become very bright."



Three Views of the Cable Transmission Line conveying Tin Ore from the Mines to the Smelter

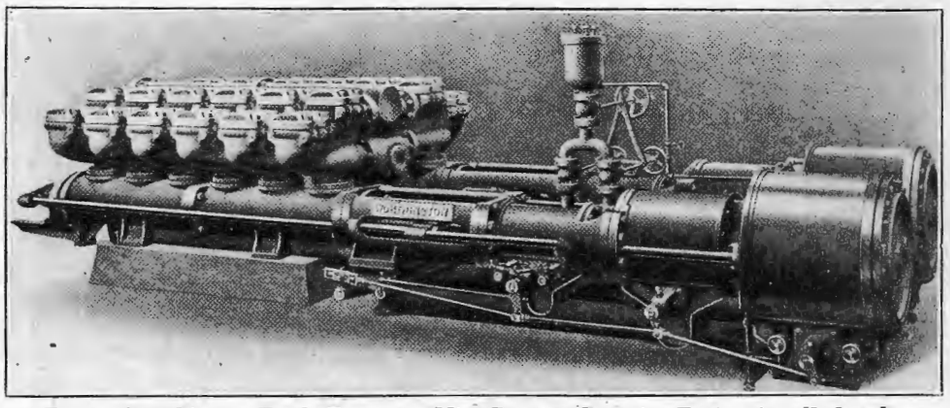
The smelter above referred to, operated by the Yunnan Tin Trading Company was founded shortly before the outbreak of the Chinese revolution in 1911. It is an official provincial enterprise under the direction of the finance bureau of the Yunnan government and like all Chinese official concerns has had its share of financial troubles during the past ten years. At one time it attempted to relieve the financial pressure on the provincial government by issuing its own bank notes, but in face of severe opposition was compelled to withdraw the issue. As the official company also works the rich Ma La Ke Mines it has managed to clear a fair profit and devote considerable funds to the betterment of its properties. One of these improvements, cutting down the excessive costs of transportation was the installation of an aerial conveyor to carry the ores from the mines to the smelter, and the pumping plant referred to by Mr. Semple, which is located at the foot of Lao Tu-shan. The plant consists of two triple-expansion Worthington pumps designed especially for this work by Mr. E. G. Norman, their engineer for China, and sold through Shewan, Tomes & Company. These pumps have a capacity of 7,000 tons of water per 24 hours delivered against a head of 3,000 feet. The water is taken from a reservoir of 3,000 cubic metres capacity fed by a small canal 23 miles long which carries the water from the Cha-tien river.

In addition to the larger smelter there are a number of the native variety, which produce an aggregate of 10 to 15,000,000 kilos annually, of which, the official smelter turns out

about 998,400 kilos. The highest output of the big smelter was 1,664,000 kilos. There are about thirty of the native smelters in the Kochiu region, which operate for only about four months in a year.

The construction of the smelters is very simple; the bricks being obtainable on the spot, they are not very costly to build. The blast is supplied by a wooden air-pump with piston packed with feathers, the usual instrument for providing blast in old Chinese forges and furnaces. Each furnace is run by ten men (five per shift) and a foreman.

Six-hour shifts are customary. Three men work at the blower, one man sees that the metal runs well from the tap-hole. One man is engaged in feeding the ore and charcoal. In addition to these, there are two men engaged in pouring the metal. The slags from the furnaces are crushed and washed to extract the matallics. The remainder is re-smelted with ore until considered free from tin. It is then dumped as conveniently as possible anywhere in the town.

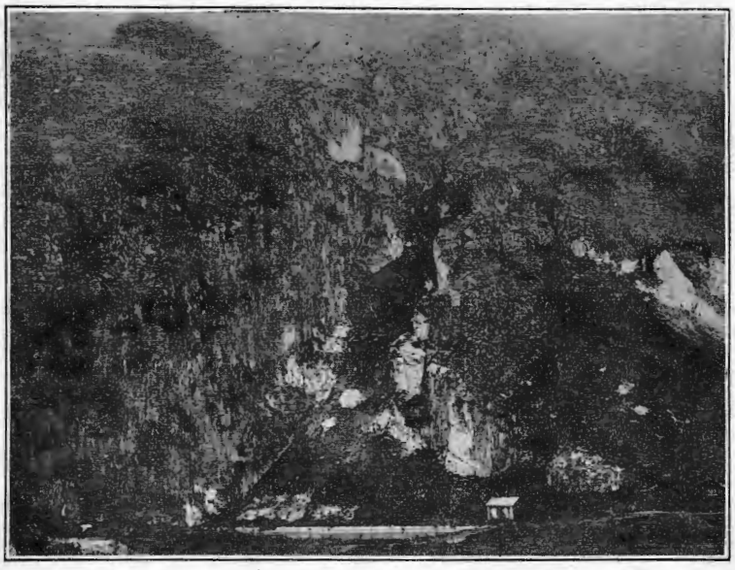


Type of Worthington Triple Expansion Mine Pressure Pumping Engine, installed at the Reservoir, delivering 7,000 tons of water per 24 hours against a head of 3,000 feet

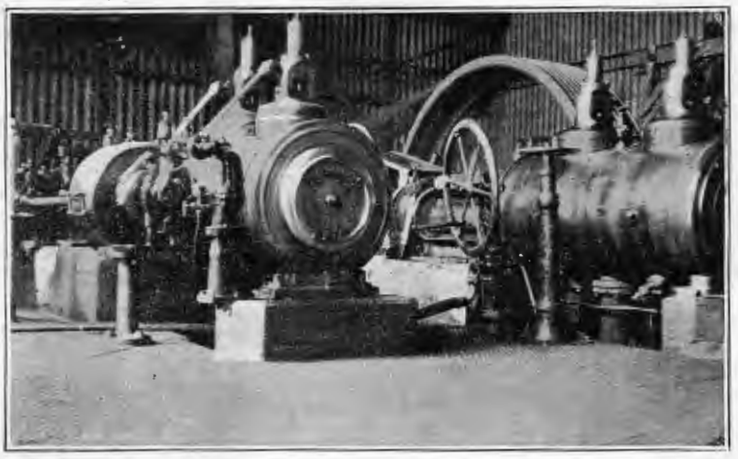
There is no attempt at refining the metal at Kochiu. The chief impurities are iron, often present to the extent of 1 per cent. and lead, usually less than a quarter of 1 per cent., though the metal from some of the mines may contain over 50 per cent. of lead.

Each slab, before leaving Kochiu, has to receive official "chops" or marks showing the slab has been weighed, and that the requisite taxes have been paid on it. When the slabs reach commerce, they usually also have been marked with the name of the furnace in which they were smelted, the merchant to whom they belong, and the transit agent through whose hands they have passed.

The miners pay no direct taxes to the government. A small local tax is sometimes laid upon concentrates for the upkeep of the roads.



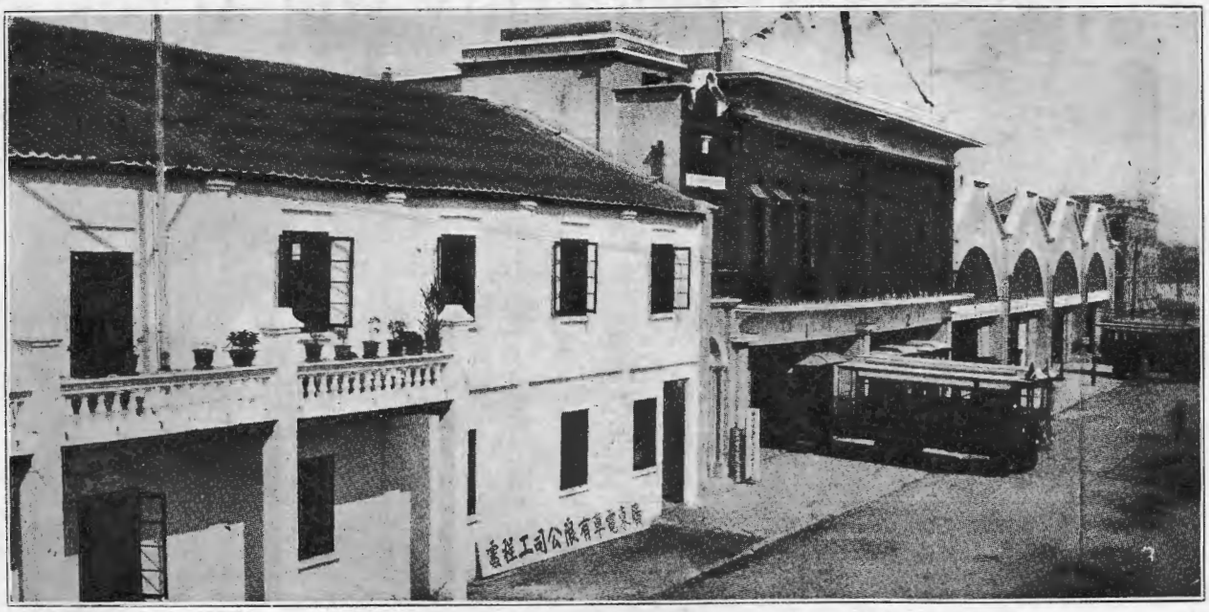
Site of Pumping Station to Supply the Ma Lake Mines, located over the top of the Mountain, 3,000 feet above the Reservoir



German Power Plant at the Kochiu Smelter

Ore Washing Plant

Siemens-Martin Tin Smelters



Offices, Car Barns and Engineering Department of the Kwangtung Tramway Co., Ltd. at Canton

The Kwangtung Tramway Co., Ltd.

EARLY in 1917, a Canadian promoter, T. R. E. MacInnes, appeared in Canton, and, obtaining an interview with the Governor, Chu Ching-lan, proposed to take down the ancient walls of the city, and cut a number of boulevards through the narrow streets, for the purpose of operating a tramway service. He was well entertained by the governor, who regarded the proposition very favorably. Mr. MacInnes was fortunate in associating with himself Mr. Peter Hing (Wu Tsic-pun) a clever and resourceful Chinese lawyer, trained in Canada, and the first Chinese graduate of McGill University. Political disturbances in Canton in 1917 prevented the scheme being carried out at the time. But two years later MacInnes returned to Canton, and continued his interrupted negotiations. In August, 1919, a concession was granted to him and his two associates, Messrs. Peter Hing and Sam Kee (Chan Choi) a well-known Chinese merchant of Vancouver, and naturalized Canadian citizen. By the concession an exclusive franchise was granted for a term of twenty years to operate any form of tramway service in Canton and suburbs anywhere within a radius of ten miles from the centre of the city. Forthwith a company was incorporated under name of the Kwangtung Tramway Company, and the concession was assigned to the company. Like the Wing On Company, the Sincere Company, the Sun Company, and other well-known Chinese mercantile organizations, the tramway company was incorporated under the laws of Hongkong as a Hongkong-China company, thereby having its affairs administered under wise regulations, and the interests of its shareholders properly protected. The company paid one million dollars Hongkong currency to the Canton government for the concession, and for that the company is free from taxation in any form, direct or indirect, during the term of the concession, or any renewal of it. The million dollars so paid was entirely expended in taking down the walls of the city, and constructing boulevards, or maloos, as they are locally known, developing a plan originally prepared by a Canadian engineer, P. W. W. Bell, who came to Canton at the suggestion of MacInnes in 1917. The company, in spite of many unusual difficulties, and civil strife in Canton, has forged ahead to success under the strong and experienced direction of Mr. Eng Hok-fong, a Chinese business man of Hongkong, who became president and managing director of the company. Mr. Eng Hok-fong is president also of the Mexico Steamship Company and the Eng Hok Fong Steamship Company, and has been a man of affairs in Mexico and California as well as China. With him, as directors of the tramway company, are associated Messrs. Ng Ye-hon, Yu Tao-sang, Chin Kwang-hing, Kwong Cheung-pao and Chung Tin-yow, all wealthy business men of Hongkong, and Messrs. Ma Chao-kum, Lau Siu-wan and Ng Cheu-kwan of Canton, and T. R. E. MacInnes of Vancouver. Mr. MacInnes is the only foreign member of the company, and he is temporarily residing in Canton to give what assistance he can to the company during present disturbed conditions. Mr. Peter Hing is the energetic local manager, and is ably assisted by Messrs. Fong Ukiah as sub-manager and Ng Lai-ting, traffic manager. The company in 1920 decided to operate motorbusses, after the fashion of London, and for that purpose purchased a number of F. W. D. trucks in the United States, building the bodies in Canton. At present, on the maloos which have been completed, the company operates twenty cars with fifteen trailers. The cars seat twenty-three first-class passengers, and the trailers forty-three second class. The company laid down several miles of specially concreted strips along the maloos on which to run its cars. It has been found, however, that the foundation is not sufficient, and the roads are in continual need of repair. So the company has now decided to lay down ten miles of double track grooved rails and run its motor cars thereon as is now economically done in the United States for short routes, and on over four hundred miles of the P. G. E. Government Railway of British Columbia. The first rails laid

Another View of Car Barns of the Kwangtung Tramway Co.

One of the F.D.W. Trucks and Trailers in use by the Kwangtung Tramway Company, starting out from the Tashatao Railway Station Terminus in Canton on the 150-foot wide Pak Wan Maloo (White Cloud Highway). These are three-ton trucks with power and brakes applied to all four wheels. This is claimed to add greatly to safety in handling, a most important feature when inaugurating a new service in a Chinese city where the prevailing sentiment is apt to be against any innovation in the old modes of transportation.

The F.W.D. trucks are designed so they can he converted into rail-cars hy simply replacing the rubher tires with steel ones and locking the steering gear. As soon as the present trouble is over, the company intends to lay down steel tracks and when this is done it will only take a couple of hours work on each car and trailer to convert them for the rails. The work is under the direction of an experienced American engineer, Mr. Harvey L. Decker, who has had considerable experience in working these cars in India.

down will be from the Canton-Kowloon Railway Station (Tashatao) to the Canton-Hankow station (Yueh Han) a distance of four miles through the busiest section of the city. For this purpose the houses along Shakee, opposite the foreign island settlement of Shameen, were being demolished with the object of widening the fifteen-foot thoroughfare to a maloo of eighty feet when the conflict between Sun Yat-sen and Chen Chuing-ming put a temporary stop to the work. This disturbance, however, is looked upon by the company as no more than a passing storm, and it is confidently expected that the normal life of the city will be resumed before the summer is over. During the bombardment of Canton on the 17th of June last the company's buildings were struck by five shot, but fortunately they were solid shot and not shell, so not much damage was done, and none of the company's employees were hit, although at a teahouse within a hundred yards sixteen people were killed and many injured, and several were killed on adjacent streets. One shot coming through the wall crossed directly over the desk where Mr. MacInnes usually sits, but he had his head elsewhere at the time, else it would not be where it now is. Except when stopped by definite military orders the company continues to run its cars during the present trouble, even when the shops are all locked and barred. To see them going gives a certain amount of confidence to the citizens, and it helps to allay panic. The period of twenty years for which the concession was granted does not begin to run against the company until a certain minimum route of maloos has been completed by the city, and therefore the present time is so much added during which the company organizes its business and trains a loyal body of employees. The company has been fortunate in securing the services of Mr. Harvey Decker, an American motor expert, who has had wide experience in handling motor-trucks in tropical countries, including India and Java. Rails will be laid down of proper weight and fashion so that if in the future it be thought more profitable to build a power-plant and run electric cars no change need be made except to add overhead equipment. From the company's experience so far, however, it is thought the gasoline car on rails will be the most profitable form of tramway service. The mere fact that each car runs on its own power, and so cannot be stopped by an accident or strike at a central power station is in itself a guarantee of continuous service for the public which cannot be had otherwise, as proved by the tramway strike in Hongkong some years ago. The company considers its future bright. And it has the satisfaction of knowing that it is indeed the mother of the maloos, and that to its inception and operation is due the great impetus for municipal improvement which has been so marked during the past two years in Canton. Regarded at first with some suspicion and conservative hostility, especially by those landowners whose lands were curtailed to make way for the maloos, yet now it is cordially appreciated and supported by all classes in Canton. Land has increased ten times in value where the maloos run, the ricsha coolies now have over fifteen miles additional roads on which they can operate, and hitherto unthought of extensions of business and opportunities for employment have come as a result of the promotion of the tramway idea.

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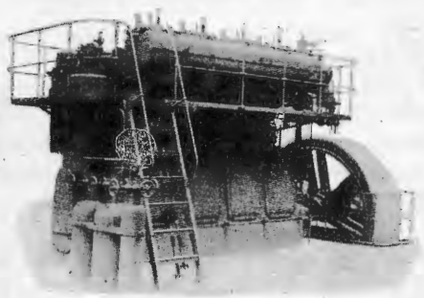

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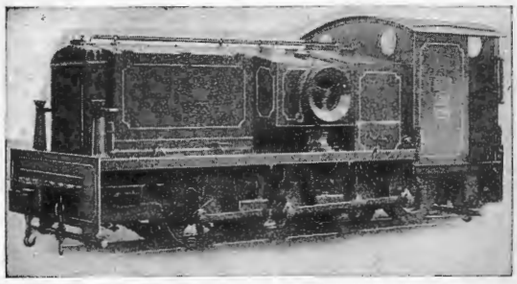

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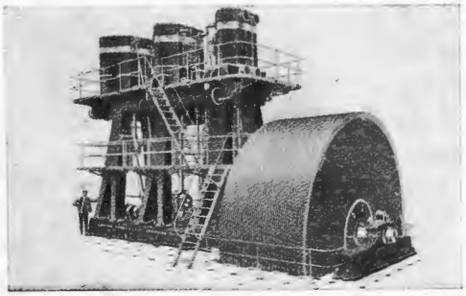

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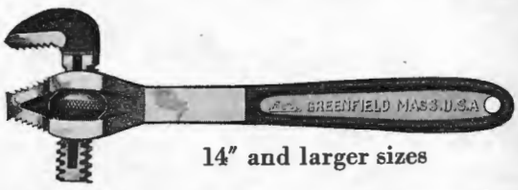

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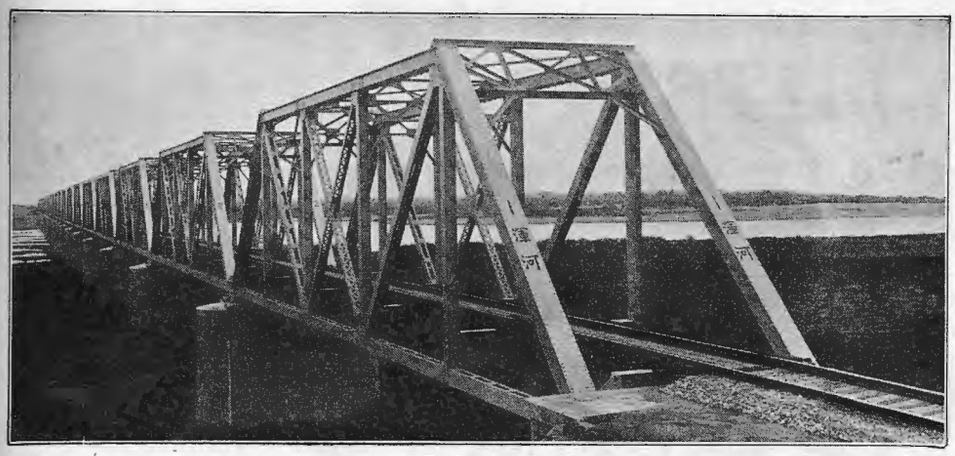

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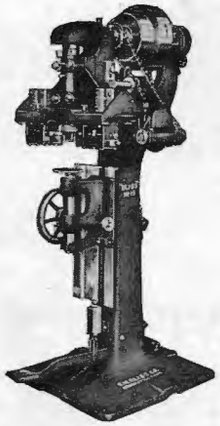

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No. 240

Menace to Travel in Manchuria

Train Wrecking as a Pastime or a Policy?

BENEATH the sedate exterior of the South Manchuria Railway, an important link of the world's highway of travel, there lurks a treacherous demon, looking for a chance to tamper with the railway traffic to the serious menace of life and property, says a recent official report on the wreck of the south-bound express.

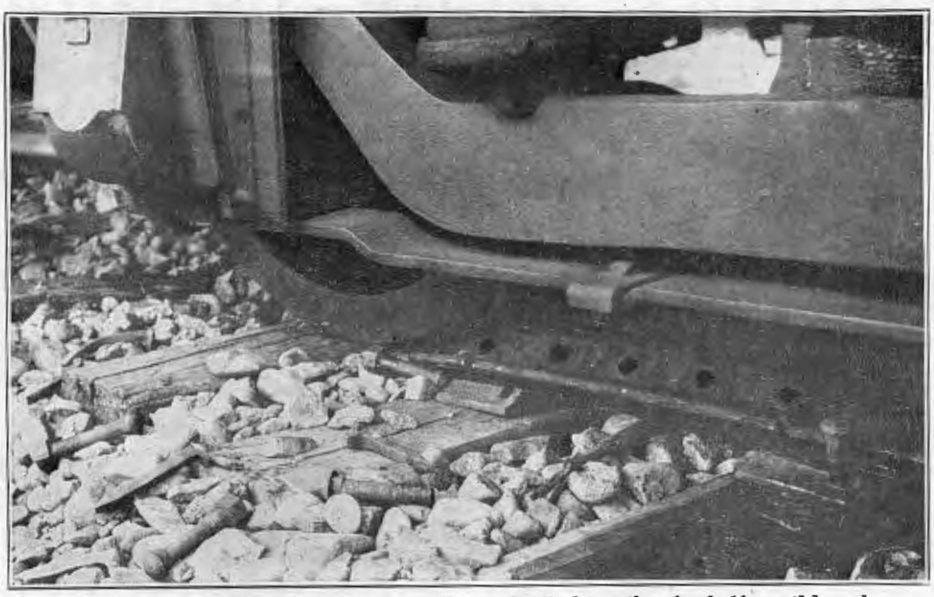
This is highly regrettable, but, with all the efforts of the railway authorities, the hopes of the traveling public to eliminate these menaces may be slow to be fulfilled.

In fact, interferences with the South Manchuria Railway traffic have been attempted with annoying frequency, but such attempts have in most cases been frustrated through the joint co-operation of the railway people, the police and the Japanese railway guard.

None of the dastardly plots to interfere with the railway traffic has been so ingenious in conception and in execution as the fatal train wrecking that occurred between Mukden and Wenkuantun, a way-side station just north of Mukden, on August 14th, 1922.

The wreckers went about their business that time with a scientific dexterity.

It is significant that robbery was plainly not the object of the wreckers, for no passengers were molested, though the first and second-class coaches were brought to a standstill in a lonely district in the pitch dark of late night.



All the six bolts of the fish-plate, together with all the spikes for half a rail length were found removed and the bolts on the next fish-plate loosened

How the Wreck Took Place

The south-bound express train leaving Changchun at 5 p.m. on August 14th and due at Mukden at 11.20 p.m. passed Wenkuantun station at the scheduled hour and was rounding a gentle curve at 407.650 kilometres north of Dairen, when, with a strange sound, the train shot sideways about 70 metres; the locomotive with two third-class passenger cars were overturned; the dining car, together with two first and second-class cars, were also derailed, but were only tilted.

The Japanese stoker was burnt all over the body by the hot water of the boiler and was killed on the spot; the Japanese driver got burnt in both legs and face and died in hospital; the Chinese help was also burnt sustaining light injury; in addition, one of the dining car attendants and two of the passengers were slightly injured.

That the two sleeping cars and the mail car attached to the train escaped scot free, and that the injuries to the passengers were only nominal were owing to the Japanese driver's caution in his knowledge that that particular section is exposed to interferences by mischief makers. No sooner than his car caught the strange sound, he at once brought the emergency brake to play. But for his presence of mind and loyalty to his duty, the consequences to the passengers would have been too terrible to contemplate, especially as the train was then running at the speed of forty miles an hour.

There has never been a shadow of doubt as to the object of the train wreckers. Their sole aim lay in interfering with the train traffic. The point, at which the wreckage took place, was in a curve. All the six bolts of the outside rail, together with all the spikes for about half the rail, had been found removed. Besides, all the bolts for the adjoining splice, too, were found loosened.

The fact that the outer rails in the bend were chosen, coupled with the fact that the work was done in the space of forty minutes between the time of the last patrols going their regular nocturnal round and the time of the express train to pass the point, indicate that such a feat could not be accomplished by a group of men not fewer than ten, equipped with some amount of technical knowledge and experience.

Instances of interference with the track and theft of accessories on the South Manchuria Railway lines have been many, especially about Mukden, as may be shown in the list.

1922. January 5, Hunho-Mukden, 395-396 kilometres from Dairen, 2 pieces of telegraphic copper wires (80 metres) stolen; January 17, at km. 394, 100 metres of wires stolen; February 10, kms. 405, spikes driven into the space between rails at the joint; March 7, km. 403, a stone weighing about 42-lbs. laid on the track; March 28, km. 403, come thirty small-sized stones laid on the track; April 5, km. 405, while a detail of railway patrols was on one of their rounds, they noticed three Chinese soldiers and two Chinese coolies placing a couple of stones weighing 25-lbs. or so. The coolies were captured and the Chinese soldiers were called upon to explain. They were going to be taken to the guards' box when about 70 or 80 Chinese soldiers gathered and attacked the Japanese soldiers and went away. April 14, km. 400, about 30 small stones were placed on the rail track. April 16, near km. 400, about 15 small stones laid on the rail; July 17, near km. 406 (between Mukden and Wenkuantun), small rocks laid on the rail; July 18, near km. 404, small rocks laid on the rail and some Chinese soldiers were noticed looking on. August 2, near km. 395 (between Mukden and Hunho), 36 kilogrammes of telegraphic copper wire stolen; August 14, km. 407, train derailed with fatal results as above stated. August 23, km. 400 (at level crossing), as train No. 44 was in motion, a stone of the size of a man's fist was thrown at the train by one of a group of seven or eight Chinese, the window pane of the caboose car was smashed, and the conductor injured.

Liuchang Coal Mines

THE Liuchang coal mines are located about 13 miles north of Chinwangtao and connected with the port by a 30-in. narrow gauge railway. These mines have a daily output of 400-500 tons, mined from two inclined and one vertical shaft. The two inclined shafts are each equipped with a 40 H.P. hoisting engines. There is also two ventilating shafts and one auxiliary shaft with a small winch.

The machine shop is equipped with a 15 H.P. engine, lathes and other machine tools to take care of repairs. A model-making room, blacksmith shop, foundry and fitting room round out the shops. The battery of boilers of the Lancashire type, produce 450 H.P., while a 10 kw. set lights the mines.

In the mines are two stage pumping plants that take care of the two 8-in. pipe lines. In addition, there are two five-inch pipe lines connected to steam pumps, which are to be replaced in the near future by electrically driven pumps.

The railroad equipment consists of three 10-ton Vulcan locomotives, one 20-ton Baldwin locomotive with tender and one 20-ton Borsig locomotive on order and which is expected to arrive shortly. Forty-four 4-ton steel coal cars and twenty 10-ton wooden coal cars complete the rolling stock. The mine cars consist of 100 wooden and 125 steel coal cars. The railroad bridges are of the trestle type, most of which are of reinforced concrete, of which material, some of the culverts are also made.

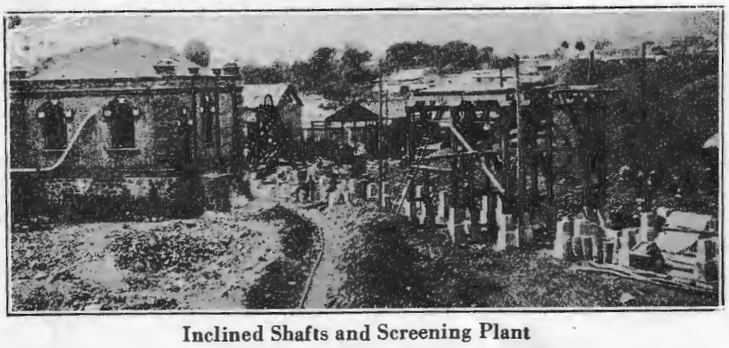
The head office of the company is located in Shanghai, It is capitalized at $1,440,000. of which $1,000,000 has been paid up.

View from East Mountain

View from South Mountain

LIUCHANG COAL MINES, 1922

Baldwin Locomotive Hauling Coal Train of Koppel Cars



Inclined Shafts and Screening Plant

Reinforced Concrete Trestle Bridge at Kouchang

South Vertical Shaft

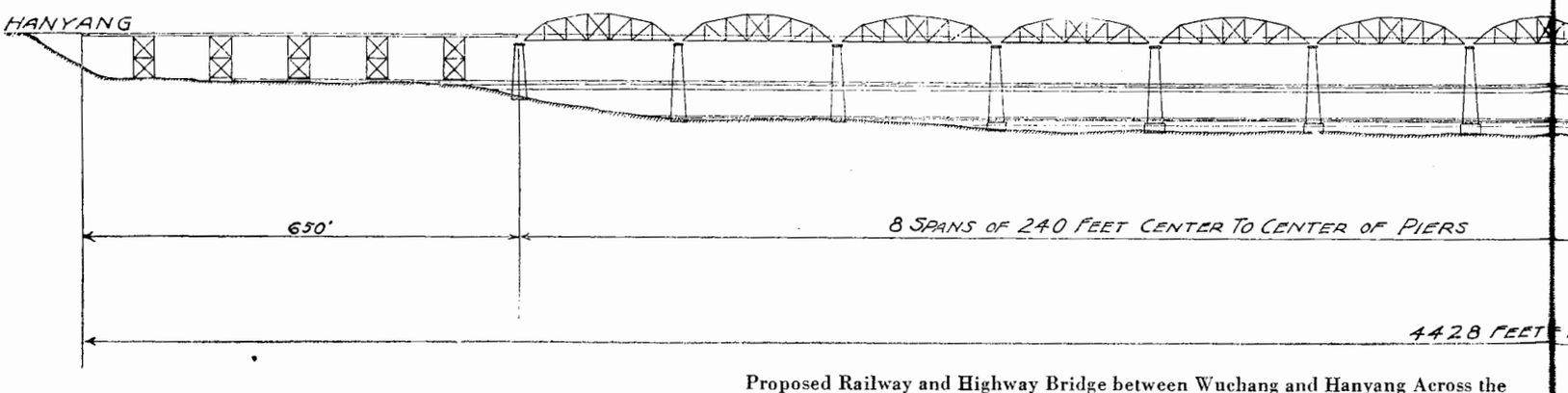
The Proposed Bridges Across the Yangtze and Han Rivers

Report upon a Project to Connect the Northern and the Southern Railroad Systems of China by Bridging the Yangtze and the Han Rivers near their Junction and to Provide Highway and Electric Railway Service between the Cities of Hankow, Han Yang and Wu Chang.

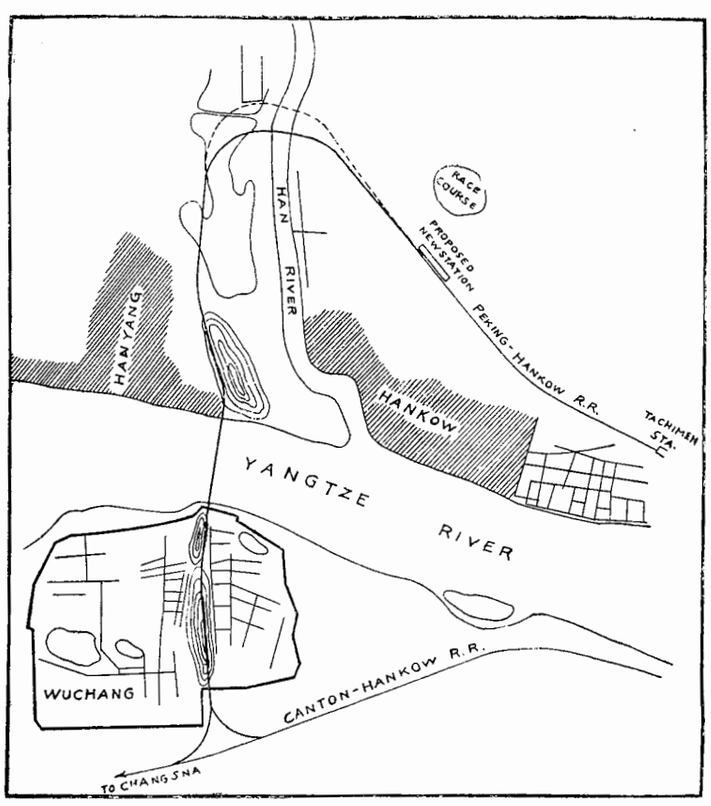
By Dr. J. A. L. Waddell, Consulting Engineer

(Ed. note.—The study of the question of bridging the Yangtze river was made by Dr. Waddell at the request of the Chinese government early in the fall of 1921. The "Commission for the New Bridge over the Yellow River" for which Dr. Waddell had come from America was dissolved at the end of August, and the minister of communications requested Dr. Waddell to remain a few weeks longer for the study of China's major bridge problems, the bridging of the Yangtze river at Hankow and at Nanking. These two crossings were carefully studied by Dr. Waddell and the preliminary plans for bridges were made along with estimates of cost. The investigation occupied several weeks and was accomplished with the assistance of the Peking-Hankow line engineers, at Hankow, and, at Nanking, with the help of engineers detailed from the Tientsin-Pukow line.

The report which follows concerns the bridging of the Yangtze at Hankow and includes the plans for two bridges, one across the Han river from Hankow to Nanyang, and one across the Yangtze from Nanyang to Wuchang. By this means the three cities, Hankow, Nanyang and Wuchang will be connected and, aside from furnishing a direct link between the Peking-Hankow R. R. and the Hankow-Canton R. R. an important municipal problem will be solved. These three cities have a total of more than two million inhabitants and, except for an irregular ferry service and a sampan traffic, are isolated while on many occasions storms close the river communication. The industries in Hankow have developed tremendously during recent years, and real estate has risen beyond all proportion to the surrounding territory. The planned bridges would greatly enhance land values in both Nanyang and Wuchang and would permit an enormous expansion.



Proposed Railway and Highway Bridge between Wuchang and Hanyang Across the



Proposed Crossings of the Yangtze and Han Rivers

There is at present no system of tramways in any of the three cities. It was planned to make the train service over the bridges an interurban one and later to build gauntleted tracks for tramcars.

The project attracted a large amount of interest among those concerned and, but for the recent disturbances in and about Hankow, might now be in the process of promotion. It is at present considered one of the most logical of the larger engineering problems and the benefits to be derived by the people of Hankow, Nanyang and Wuchang make its ultimate construction practically certain. The plans of Dr. Waddell were made in accordance with his carefully developed system of bridge economics and represent a saving of more than ten millions over previous estimates.—(Journal of the Association of Chinese and American Engineers).

Peking, October 26th, 1921.

To His Excellency,

The Minister of Communications,

Peking.

Your Excellency,

In compliance with official instructions, I have made a thorough study of the river, railroad and highway conditions at and near the junction of the Han and the Yangtze rivers, with the view of connecting the northern and the southern railway systems of China and of providing highway and (later on) electric railway accommodations between the cities of Hankow, Han Yang and Wu Chang. The project involves the crossing of both the Yangtze and the Han rivers by "combined" bridges to carry steam-railway, electric-railway, vehicular and pedestrian traffics.

Sites.

Before starting for Hankow I was informed that there was a choice in the location of the Yangtze crossing, viz., either above or below the mouth of the Han; but I soon saw that the lower crossing should not be considered, as that would eliminate entirely the city of Han Yang, unless there were built an additional crossing of the Han to connect Hankow and Han Yang. Such a combination would not connect Han Yang and Wu Chang, except by passing through Hankow.

As this combination of bridges would cost somewhat more than that of the two bridges above the junction, and as the communications between the three cities should be made as direct and intiemat as possible, I decided upon the upper site for the Yangtze structure. Moreover, this route provides the shortest possible main structure for the crossing of the larger river. The location is almost identical with the one previously selected in 1911 by the civil engineering class of the Peking government university when making a study entitled "Ideas and Proposals for a Highway and Railroad Bridge Across the Yangtze between Han Yang and Wu Chang."

In respect to the location of the proposed Han River bridge, I selected two sites, one for a high-level crossing by the railway and one farther down stream for a low-level crossing.

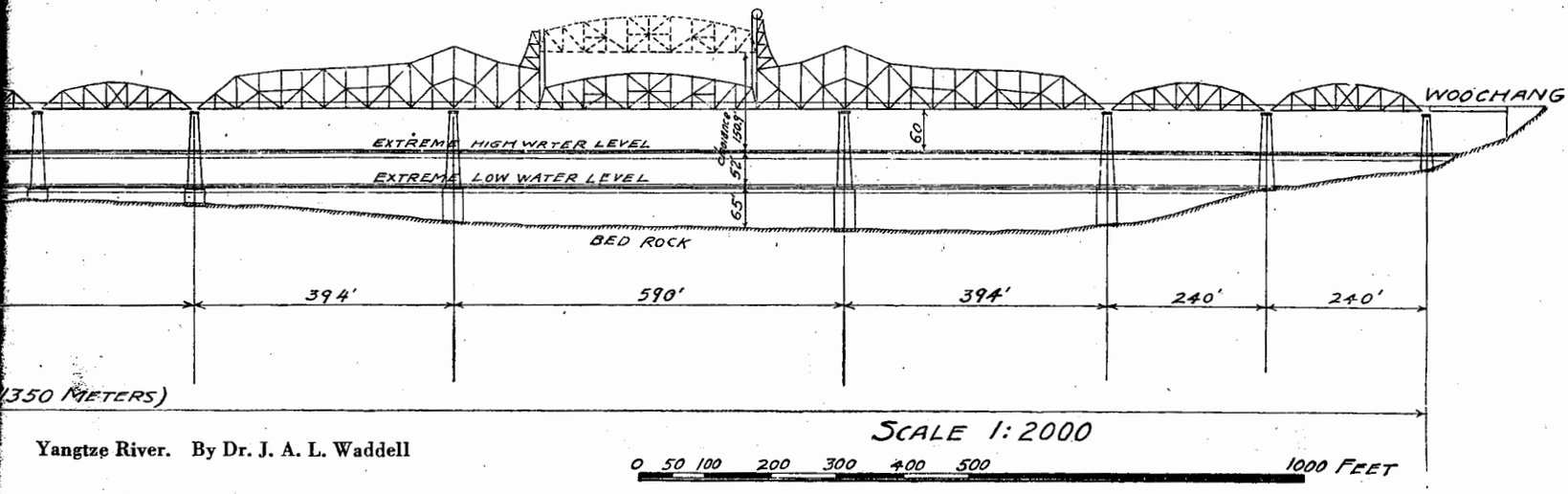
The three sites above mentioned are shown on Sheet No. 1 of the accompanying drawings.

Source of Information.

In addition to the pamphlet published by the civil engineering class before mentioned, I obtained through the courtesy of Mr. L. C. Kwong of the Kin-Han Railway a large-scale municipal map of the three cities and a large-scale railroad map of Hankow and some of the adjoining territory across the Han river, included in the exterior portion of the city of Han Yang.

A comparison of the widths of crossing of the Yangtze as given on the municipal map and as shown in the pamphlet just mentioned, indicated a discrepancy of some 220 metres. Consequently I had Mr. Kwong send a small party of engineers to make a triangulation of the river. The result checked the pamphlet within thirty metres, and showed an error of some two hundred and fifty metres on the map. This is probably due to the fact that the said map was printed in two parts that were afterwards pasted together, the junction being at about the middle of the river.

In making a portion of the map on Sheet No. 1 of the accompanying drawings I utilized the erring map by assuming that the two halves had been brought too close together during the pasting; and in Sheet No. 2 thereof the profile is the same as that given in the pamphlet, excepting only that the width of the river has been increased some thirty metres. The location of the bed-rock given in the pamphlet, I assumed to be correct, because several persons in Hankow informed me that, in making soundings at high stages of water, the sounding-weight indicated by the feel that rock was being struck. Not having available any apparatus nor the necessary time for checking the correctness of this conclusion, I was forced to assume it as being true, and to use it in the preparation of my estimate of total cost of structure for the proposed crossing. Of course, before taking any steps towards the building of the bridge, proper borings to and into bed-rock should be made at a low-stage of water. If any error be then discovered, my figures would have to be corrected accordingly.



Yangtze River. By Dr. J. A. L. Waddell

In respect to the location of bed-rock for the Han river crossing, I could obtain no information whatsoever, Mr. Kwong was of the opinion that there is none within reach, and that, consequently, pile foundations would have to be adopted; but I judge that such is not the case. In my calculations of cost I assume that bed-rock will be found at a depth of fifty feet below extreme low water. If this assumption be incorrect, no great error in the total cost will be involved, provided that a satisfactory pile-resistance be found without calling for exceedingly long piles.

Reconnaissance.

In company with Mr. Wang and Mr. Kwong, engineers of the Kin-Han line, I made a reconnaissance, partly by jinrikisha and partly on foot, of a line to connect the Kin-Han road on the north with the Canton-Hankow road on the south. This route is indicated on Sheet No. 1. It is quite satisfactory; but I should advise draining completely the large lake between the two rivers and dyking against over-flow at high-water stages before building an embankment there. It is true that this would call for a small pumping plant to remove at high-water stages the water that might otherwise accumulate through either rainfall or seepage, or both combined; but the cost would be warranted by the great value of the land thus reclaimed. At first it could be utilized for

agricultural purposes (and as such would be found exceedingly rich and suitable for market gardening); but later it would be needed for the expansion of the cities of Hankow and Han Yang, both of which are now greatly congested. Again, the land between the two rivers will ere long be needed for the establishment of important industries.

It was not necessary for me to walk over the Wu Chang approach of the steam-railway; because, by standing at the summit of the high hill near the river, I could determine the entire route thereof. I saw that by utilizing the steep sides of two long hills, running at about right angles to the direction of the river, an excellent line with easy grade could be located, and that no buildings of any importance need be damaged.

At first I figured upon a high-level crossing of the Han river; but, owing to the location of a proposed union depot, which, for good and sufficient reasons, could not be changed, there would have been necessitated a grade of one and a quarter (1.25) per cent., in order to provide the necessary clearance for passing junks. Later, however, I decided that it would be far better and cheaper to adopt a double-deck structure, having the highway above and the steam-railway below with the grade very close to the extreme-high-water elevation, the railway deck being suspended from the over-head trusses by telescoping hangars, according to the method that I evolved and utilized a dozen years ago when building the Fratt bridge across the Missouri river at Kansas city. This structure is described at length on pages 723 and 728, inclusive, of my treatise on "Bridge Engineering."

The advantages of the low-level railway-crossing of the Han over the high-level crossing are as follows:

First. There is a saving of at least $2,500,000, in the first cost, owing to the entire avoidance of expensive steel trestles.

Second. The cost of operation is much less, due to the saving of some fifty-five feet of climbing.

Third. The total length of the connecting railroad between the north and the south systems is some 7,000 feet shorter by the low-level route, thus saving, by reason of reduced length alone, something in both first cost and operation.

On the other hand, though, there are the following disadvantages:

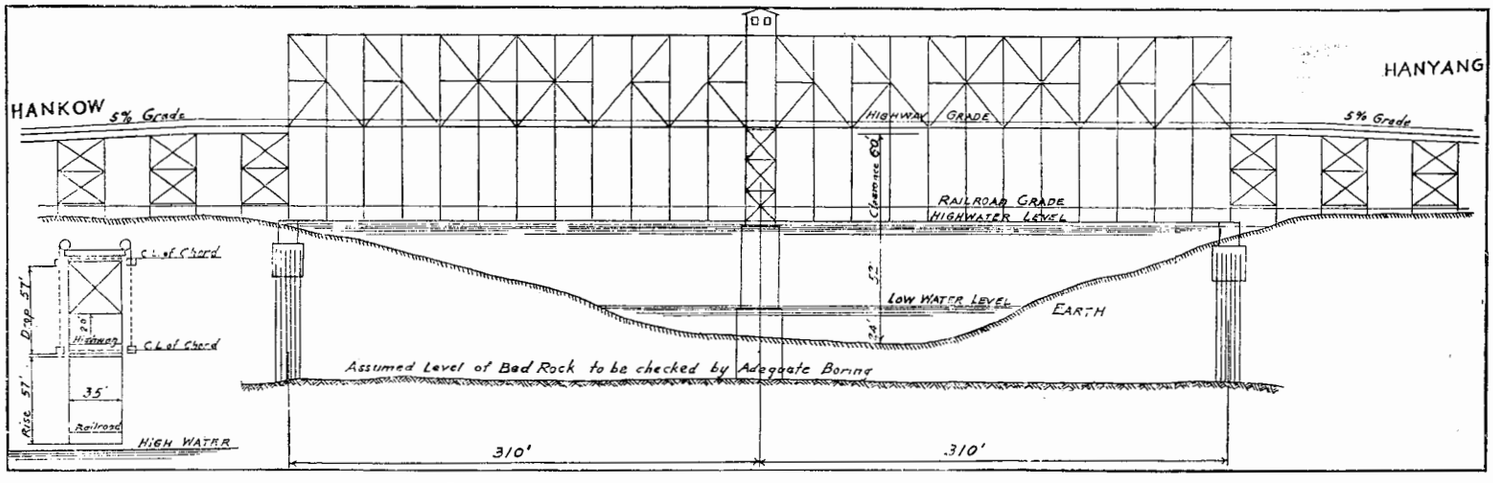
First. The low-level crossing will interfere a little with the passage of junks, and this interference will increase as the railroad traffic augments, although probably not at all seriously.

Second. The stopping of trains to allow for the lowering of the deck would cause a small loss of time in railroad operation, although by no means as much as that involved by the fifty-five foot extra-climb before mentioned.

On the whole, the advantages of the low-level route greatly outweigh the disadvantages; and if, in the dim and distant future, the river traffic and the railroad traffic should increase so greatly as to cause too much interference, a high-level railroad-bridge could be built so as to divide the railroad traffic between the two structures and thus halve the said interference.

River Conditions.

The amount of junk traffic on both rivers is immense, and numerous craft are constantly moving both up and down stream. On the narrow Han river this is specially noticeable; and it is said that at times one experiences great difficulty there in passing by launch through the mass of vessels that extend from bank to bank. On this account I have deemed it to be both right and economic to allow, between high-water shore-lines in both bridges, a vertical clearance, above extreme high-water elevation, ample for passing the masts of the tallest junks in the district. From personal observation and by enquiry I have set this clearance at sixty (60) feet, but I did not have time to measure the heights of any masts. This assumption is sufficient for the preparation of a preliminary estimate of cost; but, before determining finally upon the layouts of structure preparatory to building, the matter should receive thorough investigation. An increase of a few feet in the clearance would augment the total cost only slightly, because the railroad approaches of the Yangtze bridge run into side-hills at each end at a short distance from the river bank, which distance would not be any greater, were the elevation of grade made a little higher. The larger cost would be mainly due to the taller piers of the bridge and the longer highway approaches. In the case of the Han river bridge, the railroad grade being close to high-water elevation, the railroad approaches would not be at all affected by the higher clearance.



Proposed Railway and Highway Bridge Across the Han River;
By Dr. J. A. L. Waddell

It has been suggested to me that it is feasible in China to compel all junks to take down their masts when passing beneath bridges, as is the case on the Yellow river structures, where the amount of water-traffic passing is small; but on a great internal highway like the Yangtze and upon such a congested stream as the Han, to necessitate the lowering of masts would be an inexcusable hardship to inflict on navigation.

As for the passing of ocean-going vessels with their tall masts at the proposed Yangtze crossing, you will see from Sheet No. 2 that I have provided a vertical-lift span of three hundred and twenty-six (326) feet with a vertical clearance of one hundred and fifty (150) feet, which clearance could be increased, if necessary, at very small expense.

There is a condition of some importance affecting the layout of spans, viz., that large rafts of timber are floated down river. They are both long and wide; and, while it might not be economic to increase greatly the cost of structure so as to accommodate their passage between the piers, it is only proper that the rights of the owners of rafts should be given due consideration. With the layout I have adopted, the smaller rafts could pass anywhere, the least horizontal clearance between piers being a little more

than two hundred feet; but the larger rafts would have to be so steered as to go under one of the three longer spans. The horizontal clearance of the main opening, being over five hundred and fifty feet, ought to give ample facility for the passage of the largest of such rafts, provided it be properly navigated.

Layouts.

As can be seen by reference to sheet No. 2, the layout for the proposed Yangtze crossing, starting from the Wu Chang side, consists of two through simple-truss spans, each 240 feet, an anchor arm of 394 feet, a cantilever span of 590 feet, an anchor arm of 394 feet, and eight through, simple-truss spans of 240 feet each, all measurements being taken from centre to centre of piers. This layout practically covers the entire river between high-water shore-lines.

The layout for the proposed Han river crossing consists of two simple truss spans with parallel chords, carrying a suspended deck for the double-track railway, as shown on Sheet No. 3.

Traffic Provisions.

The question of double-track *versus* single-track for the two structures is one to which I have given considerable thought. In America the question would not have arisen; for experience has taught American railroad engineers that it is always truly economic in the case of a long and expensive proposed railroad bridge to provide for a double-track, because eventually it certainly will be needed. Here, however, where money for big enterprises is scarce, I felt that the point should not be decided without full deliberation.

In view of the fact that the length of the Yangtze bridge and its steel approaches is about a mile, if this length were to be of single track and later both the north and the south trunk lines were to be double-tracked (as undoubtedly they will be some day), the volume of traffic would be far too greatly restricted. It is true that there might be adopted an expedient I evolved and patented in the U. S. A. many years ago, by which the piers are built for double-track, as are also the cross-girders of the superstructure, two of the four lines of stringers being temporarily omitted, the trusses being strong enough for single-track only, and provision being made for building duplicate trusses alongside and so connecting the old and the new ones as to make them divide the total load equally between them.

Were the structure to be a railway bridge pure and simple, such an arrangement might save temporarily a considerable amount in first cost and a large sum of money in interest charge; but as highway traffic has to be taken care of at once, this expedient is really not feasible.

For the Yangtze crossing I have, therefore, adopted a cross-section, as shown on Sheet No. 2, having the double-track steam-railway between the trusses with an eighteen-foot roadway on each side, exterior thereto, and an eight-foot sidewalk outside of each roadway. The traffic on each roadway is to be in one direction only; and this restriction will apply to the sidewalks also.

At present there are no electric tramways in any of the three cities, but the time is coming when there will be; and it will then be highly advisable to connect the tram lines of the three cities. This could be done by building separate approaches to each bridge for the said tram lines, and by running them between the trusses on gauntleted tracks. This expedient obviates the necessity for any switching or any blocking system between the steam railway and the electric line.

I have laid out both structures and their approaches so that there would be no intersection at grade of any two kinds of traffic—an arrangement that not only increases materially the capacity of the bridges but also reduces to zero the possibility of accident from intersecting traffic.

Pedestrians are to be admitted to and taken from each bridge by stairways located near the high-water shore lines; and they should never be allowed to enter the highway-traffic road-ways. Jinrikisha men and those hauling carts, of course, should not be considered as pedestrians, but should be compelled to use the said roadways.

Ramps with grades not to exceed eight per cent. might be substituted for the stairways; but, whichever type of pedestrian approach be adopted, landings or resting place should be provided.

On sheet No. 3 is shown a cross-section of the Han river bridge, indicating that the highway traffic is carried at the upper level between the trusses and the sidewalks at the outside thereof, and that the railway traffic is cared for at the lower level by a steel floor-system suspended by telescoping hangars from the truss above. For the purpose of reducing to a minimum the total weight to be lifted by the electric machinery, the said floor-system should be manufactured of some high alloy of steel, such as nickel steel.

Grades.

In my opinion, the greatest allowable grades should be one per cent. for the steam-railway, five per cent. for the highways, and from five to seven per cent. for the electric tram-lines. The proper limit for the latter will depend upon a number of conditions; but any grade between these figures would be fairly economical in respect to both first cost and operation.

Live Loads.

For these structures I advocate the adoption of the following live loads as given in "Bridge Engineering":—

Steam railway	Class 60
Electric railway	Class 25
Highways (Floor system)	Class B
(Trusses)	Class C
Footwalks	Class C

Specifications.

For designing the substructure and the superstructure of these bridges I am of the opinion that it would be best to adopt the specifications, principles, and methods given in my "Bridge Engineering," but if, for any reason, the superstructure specifications of the American railway engineering association be preferred, there could be no valid objection to their adoption.

Materials.

I have figured on employing carbon steel for the entire superstructure; but later on it may be found more economical to employ nickel steel or some other high alloy of steel instead, especially for the moving span of the Yangtze river bridge and for the moving deck of the Han river structure.

For the railway floor I assumed the American standard practice of employing creosoted wooden ties and guard-rails with a narrow plank footwalk on each side for the use of employees only, the spaces between the ties not to exceed five inches.

For the highway floors I have adopted creosoted-block pavement four inches thick, supported on reinforced-concrete slabs about seven inches thick. In order to reduce the weight of this case to a minimum, I have estimated upon employing Haydite concrete, which effects a saving of some fifty pounds per cubic foot, as compared with ordinary concrete.

For the footwalks I have adopted four-inch slabs of reinforced Haydite concrete.

For the shafts of piers I have figured on using plain concrete, excepting that the copings thereof should be of dressed granite. As there is no ice in the river, there is no need for using granite facing for any portion of the piers.

For the bases of the piers sunk in deep water, I have estimated upon using timber shells filled with concrete up to an elevation of four feet below extreme low water; but for those sunk in shallow water or on a sandbar, I have adopted reinforced concrete for the shells, in order to avoid the employment of timber, which at Hankow would be quite expensive. It is necessary to adopt it for the deep-water piers, in order that the caissons may easily be floated into place.

Methods of Construction.

As all piers will reach bed-rock, at a depth not exceeding seventy feet at low water, I have adopted the pneumatic process throughout. It will be necessary to put down the caissons at comparatively low stages of water, although, after the sinking of a caisson is well started, it will be practicable to continue it, provided that the head of water does not exceed one hundred and fifteen feet.

Erection of spans should be done at comparatively high water by the method of flotation. The conditions for this at Hankow are quite favorable. I have employed the method extensively in my American practice on such rivers as the Fraser, the Williamette and the Columbia on the Pacific coast, and am figuring on so doing for the proposed Mississippi river bridge near New Orleans.

Unit Prices of Materials.

In determining the unit prices of materials in place I have used much deliberation; because, while I do not want to make the total cost so high as to discourage building, I cannot risk my hardly-earned reputation as a safe estimator by adopting figures that are lower than those which it would be found necessary to pay when letting the contract for construction. I made careful enquiries as to the cost of timber, piling, sand, brokenstone, granite masonry, cement, common labor, skilled labor, etc., at Hankow; and I guessed that the probable cost per pound for carbon steelwork delivered at Hankow would not exceed 4.25 cents gold, allowing for erection and profit thereon 2.0 cents per pound gold, making 6.25 cents gold erected, which is now equivalent to 11 cents Mex.

In proof of the correctness of this surmise I would state that a few days ago I received a letter from my New York office containing the information that it had just let the contract for a steel bridge at Trenton, New Jersey, at 4.6 cents per pound erected. Allowing one cent gold per pound for freight and 0.5 cent gold per pound for extra cost of erection at Hankow would bring the total to 6.1 cents gold, which is a trifle under the 6.25 cents that I had assumed.

For the average cost per pound of the machinery and wire ropes for the vertical lift, I had assumed 50 cents Mex.; and I am informed that at the before-mentioned Trenton-bridge letting, which structure will include a vertical lift span, the pound prices in gold that were tendered ranged from 15 to 20 cents for the main sheaves and from 22 to 30 cents for the operating machinery, equalizers and ropes. An average of these figures is 22 cents gold, which is now equivalent to 38.5 cents Mex., proving that my allowance was ample.

Estimated Quantities of Materials.

Upon the assumed profits of bedrock I have estimated carefully in detail, and have checked the quantities of copings, shafts, and bases of all piers, and those of all materials entering into the flooring of the superstructure. As for the weights of metal, I took them from the diagram on page 155 of my "Economics of Bridgework," which diagram was prepared from the estimated weights of carbon steel for various span lengths in my before-mentioned proposed Mississippi river bridge near New Orleans, the carrying capacity of which is exactly the same as that assumed for the proposed Yangtze and Han structures.

I am offering these statements in order to give you confidence in respect to the correctness of my estimates of cost, fearing that the remark made by my British colleague at a general board meeting of the Yellow river bridge commission may have reached your ears and prejudiced your judgment of my estimates. He stated that my estimates of cost for an economically designed bridge to cross the Yellow river would have to be greatly increased; because engineers' estimates were always too low, his own often having been exceeded by as much as one hundred per cent. My reply was that if my estimates of cost should be over-run by even a small portion of that percentage, I would soon be entirely out of work.

In America engineers *must* figure closely; and my estimates are very seldom over-run, and then only slightly. For instance, the last estimate I made before leaving New York was for the superstructure of a bridge consisting of three spans of three hundred feet each, the middle one being a vertical-lift span. My estimate of total cost was $620,000, and the lowest bid (which took the contract) was $619,000.

In the case of the before-mentioned Trenton bridge, let last month upon a falling market, the contract was awarded for a sum materially below our estimate of cost.

Estimates of Total Cost

My estimates of cost are as follows:

YANGTZE RIVER BRIDGE.

Substructure.

Copings 582 cu. yds.	@ $ 40 =	$ 23.280
Shafts 48,568 cu. yds.	@ $ 17 =	825,565
Bases with concrete shells 5,000 cu. yds.	@ $ 33 =	165,000
Bases with timber shells 15,326 cu. yds.	@ $ 42 =	643,692
Total cost of substructure		$1,675,628
Ordinary structural carbon steel, 51,450,000-lbs. @ 11 cents		$5,659,500
Machinery and ropes, 280,000-lbs. @ 50 cents		140,000
Flooring, 3,770 lin. ft. @ $ 120		450,000
Counterweights, 1,030 cu. yds. @ $ 25		25,750
Electrical apparatus and house		44,000
Total cost of superstructure		$6,319,250

Railway Approaches.

Steel, 4,400,000-lbs. @ 10 cents	$440,000
Flooring and pedestals, 1,750-ft. @ $30	52,500
Total cost of railway approaches	$492,500

Highway Approaches.

Steel, 1,800,000-lbs. @ 10 cents	$180,000
Flooring, 1,750 lin. ft. @ $ 70	122,500
Stairways	22,500
Total cost of highway approaches	$325,000

Grand Total.

Substructure of bridge	$1,657,628
Superstructure of bridge	6,319,250
Railway approaches	492,500
Highway approaches	325,000
Summation	$8,794,378
Engineering and contingencies, 10%	879,438
Total cost of Yangtze bridge and approaches	$9,673,816
Say	9,700,000

HAN RIVER STRUCTURE.

Substructure.

Shafts, 2,100 cu. yds. @ $ 17	$ 35,700
Bases, 3, 530 cu. yds. @ $ 33	116,490
Total cost of substructure	$152,190

Superstructure and Towers.

Ordinary carbon steel, 10,600,000-lbs. @ 11 cents	$1,166,000
Flooring, 640-lin. ft. @ $ 120	76,800
Machinery and ropes, 448,000-lbs. @ 50 cents	224,000
Counterweights 640 cu. yds. @ $25	16,000
Electric apparatus and house	80,000
Summation	$1,562,800
Highway Approaches (To Carry Also Electric Railway Trucks) and Stairways	$560,000

GRAND TOTAL.

Substructure of bridge	$ 152,190
Superstructure of bridge, and towers	1,562,800
Highway approaches and stairways	560,000
Summation	$2,274,990
Engineering and contingencies 10%	227,500
Total cost of Han river bridge	$2,502,490
Say	2,500,000

CONNECTING RAILWAYS.

Double-track railway with small stations, sidings, etc., complete, 5 miles @ $60,000	$300,000

TOTAL COST OF PROJECT.

Yangtze river bridge	$ 9,700,000
Han river bridge	2,500,000
Connecting railway line	300,000
Grand total cost of project	$12,500,000

ECONOMICS.

A study of the preceding estimates of cost might cause one to think that the layout of spans is not economic, because the cost of the superstructure is so much greater than that of the substructure. It is true that the adoption of shorter spans would reduce somewhat the grand total cost of the project; but I believe that it would interfere too much with navigation.

NECESSITY FOR MATERIALIZATION OF PROJECT.

In my opinion, the materialization of this project in its entirety, in the manner in which I have laid it out, is of paramount importance to the Chinese republic. The connection of the two great railroad system would be a link that would bind closely together North and South China, not merely by increasing trade between them, but by facilitating personal intercourse between the two sections of this great country, unhappily at present so divided. It would be a great pity to have the existing division continue indefinitely, for the results thereof would be just as disastrous as would have been those in America, had the attempted segregation of the southern states from the union proved successful.

Again, there are approximately two million inhabitants in the three closely-located cities at the mouth of the Han: and the only present means of communication between them is by water. In stormy weather it is exceedingly difficult, and occasionally totally impracticable, to cross the Yangtze at Wuchang; hence highway-bridge connection between the three cities would be a real boon, and would undoubtedly give a great impetus to the business of the entire district. The existence of the railroad connection would induce the establishment of new manufacturing enterprises in all three of the cities: and the draining of the shallow lake between the two rivers, before referred to, would provide ample space therefor—to say nothing of that which would be available along the banks of the Yangtze both above and below the suggested crossing.

The materialization of this project is as important a matter for the development of China as any that has ever been suggested; and patriotic Chinese capitalists would do well to give it immediate and serious consideration.

SUGGESTED METHOD OF FINANCING.

I am of the opinion that, as soon as the present upset condition of the financial world has changed for the better, it would be practicable to procure from American bankers the money needed for building the two bridges and the connection railroads. It would be necessary, though, for the Chinese government to guarantee the ultimate payment of both principal and interest, and to allow the bond-holders to operate the structures and collect the tolls until the debt is cancelled, the said tolls being applied to the payment of interest and to the refunding of the principal.

The highway travel over the bridges would be immense, were reasonable tolls adopted; and there should be a charge made for every loaded or unloaded car carried across by the railroads.

At present there should be considerable freight for the north from the territory traversed by the Hupei-Hunan section of the Canton-Hankow line; and as soon as the existing gap is completed, the amount of both freight and passenger rail-traffic over the bridge would be enormous.

Later on I might be able to be of service in securing American capital for this enterprise; and, if so, it would give me great pleasure and satisfaction to aid the Chinese government in that manner.

CONCLUSION.

In conclusion, permit me to offer the suggestion that this report be given to the Chinese institute of engineers and to the association of Chinese and American engineers for publication in their proceedings, from which it would undoubtedly be copied largely both at home and abroad, thus bringing the project to the attention of the financial world.

Trusting that this work which I am herewith completing will meet with your excellency's approval.

I remain, with great respect,

Yours faithfully,

(*Sgd.*) J. A. L. WADDELL,

Consulting Engineer.

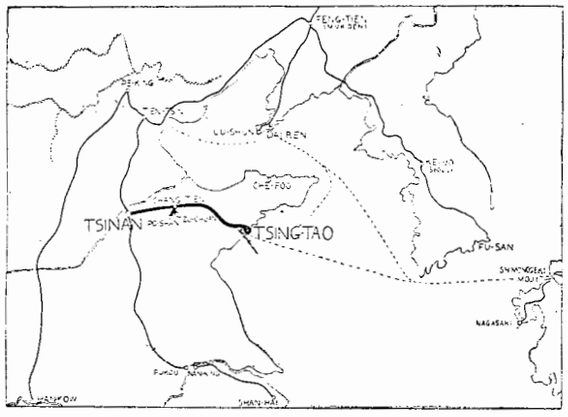
New Sino-Japanese Loans

IT is reported that Mr. Chang Chien, who is a leading business man in Nantungchow, an industrial town in the mid-eastern part of China, and who was formerly the minister of agriculture and commerce, is now interested in a movement for the raising of three private loans in Japan, that is, one for Yen 30,000,000, another for Yen 15,000,000, and a third for Yen 8,000,000, for the purpose of starting land exploitation and irrigation schemes in the south-eastern region of Kiangsu, between Nantungchow and Hweichow, and also for the development of the spinning industry in Nantungchow, in which Mr. Chang is concerned. It is said that three delegates of Mr. Chang are now in Japan and are negotiating with Japanese capitalists belonging to the Japan-China business association through Viscount Shibusawa, and that the Japanese investors are rather favorably inclined to the proposal.

Strangely, however, this proposal is said to be exciting considerable opposition among the Chinese people, and Mr. Chang is reported to be having a difficult time in explaining his position to them. We are puzzled to understand why the Chinese people are opposed to the idea, unless it is merely due to the usual anti-Japanese sentiment. It may be that they fear these loans will lead to the destruction of sovereignty in China, but it is impossible that a purely private and genuinely economic loan for the development of the land, which is bound to result in the promotion of the interests of the local people, should prove dangerous to the sovereignty of the country. On the contrary, history most clearly shows the tremendous public benefit, which similar loans have brought to the people of China, as in the case of the Wei Ho conservancy loan, which was signed in April, 1916. This loan, at first, originated from the importation of $20,000,000 gold from America on the security of the land revenue, the river-improvement tax, and the canal transit duty in the province of Kiangsu, as the result of negotiations between Mr. Chang and Dr. Reinsch, American minister to China, who at the time was a representative of the American red cross society. Later the Siems-Carey Railway & Canal Company of America and the Industrial Bank of Japan jointly invested $6,000,000. So far as our knowledge goes, this has so far not affected the sovereignty of China in the least, nor can it ever do so in the future.—*Osaka Mainichi.*

SHANTUNG RAILWAY

The Shortest Route between Japan and North China



THROUGH TRAFFIC

Through passenger tickets are issued between the following principal stations of the Shantung Railway: Kiaochow, Kaomi, Fangtsu, Weihsien, Chingchow, Changtien, Choustun, Tsinan, Tzuchuan, Poshan, and the following points: In Manchuria—Port Arthur, Newchwang, Liaoyang, Fushun, Mukden, Tiehling, Kaiyuan, Changchun, Penchihu, Antung, and Dairen; in Japan—Tokyo, Yokohama, Nagoya, Kyoto, Osaka, Kobe, Ujina, Moji, Shimonoseki, Nagasaki and Shanghai.

Steamer Connections—Steamers leave the wharves of the Large Harbour, Tsingtao, for Moji and Kobe every five days, for Shanghai about twice a week and for Dairen about three times a week.

For giving facilities to through passengers for Japan, a special train in connection with the night train No. 4 is operated from the Harbour Station to the Wharf, direct alongside the ship, on those days when the liners of the Nippon Yusen Kaisha, Osaka Shosen Kaisha, and Harada S.S. Co. are leaving.

Through passengers and their luggage are carried free of charge for this section.

Collieries—The Tzuchuan (Shisen) and Fangtzu (Boshi) Collieries are managed by the Mining Department of the Shantung Railway. At present the daily output of Tzuchuan coal is about 1,500 tons, far surpassing the amount taken out when the Germans were in control. The coal is well-known for its good quality and fair price.

Tsinan—Tsinan, the capital of Shantung, is the western terminus of the Shantung Railway, and also one of the most important stations on the Tientsin-Pukow Railway.

The Tsinan Railway Hotel, furnished in modern European style, is found on the upper floor of the Tsinan Station, under the control of the Shantung Railway Administration.

THROUGH TRAIN SERVICE

Train No. 1	leaves Tsingtao daily 10.00 p.m.	arrives Tsinan	8.00 a.m.
Train No. 3	leaves Tsingtao daily 8.00 a.m.	arrives Tsinan	6.40 p.m.
Train No. 2	leaves Tsinan daily 11.00 p.m.	arrives Tsingtao	8.35 a.m.
Train No. 4	leaves Tsinan daily 10.10 a.m.	arrives Tsingtao	8.20 p.m.

Local Trains run between Tsingtao and Kaomi, Weihsien and between Fangtzu and Tsinan, and on the Poshan and Tzuchuan colliery branches.

Fares—Tsingtao-Tsinan—1st class, $14.30; 2nd class, $7.20.

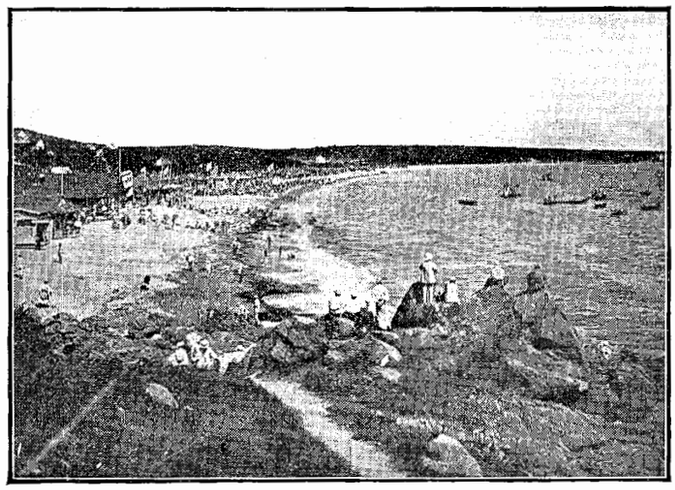
First Class Sleeping Car—A first-class sleeping car is attached to night trains Nos. 3 and 4 running between Tsingtao and Tsinan. For a berth in the sleeping car in S.Y. 3.00 for the lower berth and S.Y. 2.00 for the upper berth is charged in addition to the ordinary first-class fare, irrespective of distance.

Dining Car—A dining car is attached to through trains Nos. 1, 2, 3 and 4 running between Tsingtao and Tsinan. Meals are served to order at any time.

Ticket Agencies—Messrs. Thos. Cook & Son and their branch offices in various parts of the world. The Japan Tourist Bureau in Tokyo and their Agents in Yokohama, Kobe, Nagasaki and Peking.

Connections at Tsingtao—By steamer with Japan, Manchuria and Shanghai.

Connections at Tsinan—By Tientsin-Pukow Line with Tientsin, 6.00 & 9.38 a.m. daily, and with Pukow, 7.44 a.m. & 10.21 p.m. daily.



BATHING BEACH, TSINGTAO.

Description of Tsingtao

Tsingtao is considered the most healthful place in all the Far East. The scenery including both mountains and sea, is most beautiful. There are quite extensive forest gardens, bits of woodland here and there, and many delightful shady lanes affording most interesting walks through them.

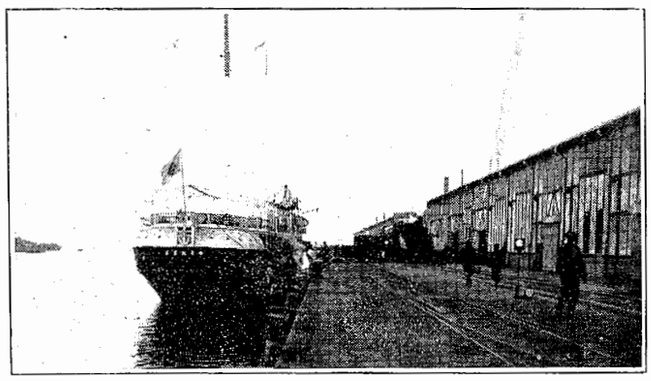
The roads are all broad, with very moderate gradients. They are of both macadamized and asphalt construction for vehicle traffic, while the sidewalks are either paved or concrete. These streets are practically all lined with beautiful shade trees.

The buildings are constructed principally in modern European style, with red tiles and white walls, contrasting pleasantly with the surrounding green mountains and blue sea.

The climate here is fine from Spring to Autumn, being neither too hot nor too cold. These climatic conditions make the place a favourite summer resort for Europeans and Americans from Shanghai, Tientsin, and other places.

The hotels are luxuriously furnished with up-to-date equipment and are under the efficient management of Mr. H. J. Hearne.

The hotel rates are $6.00 and up, per day, on the American plan.



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上海仁記路第五號

遠東時報

LINKED WITH AMERICA IN BIG INDUSTRY

Tientsin's New Power Station

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Shipbuilding Industry of Japan

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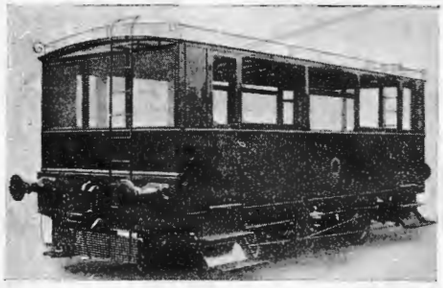

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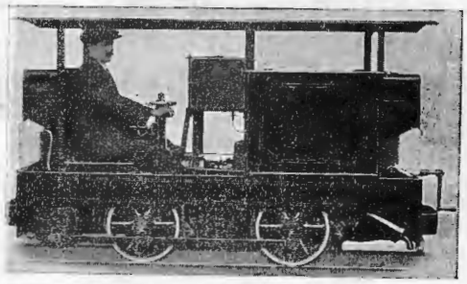

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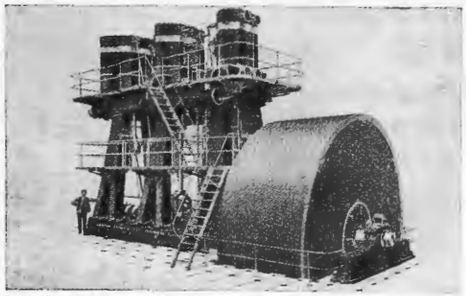

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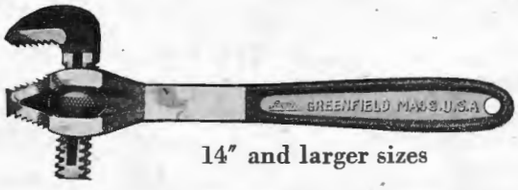

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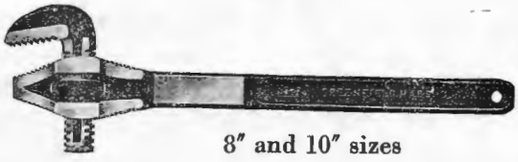

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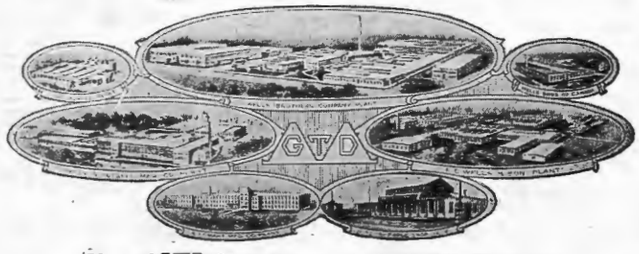


Plants of **GTD** *Corporation, World's Largest Manufacturers of Screw-threading Tools*

The special chance of the great war opportunity which gave Japan the third place in the amount of tonnage launched in 1919 has now passed. It is clear that the shipbuilding industry in Japan will continue to decline in importance and profit. There are two fundamental reasons why this will be so, the one the high cost of all shipbuilding material in Japan, and the other the extremely inefficient labor on which the industry must depend.

Japan is obliged to import practically all of its steel "shapes." There are some shipbuilding yards, it is true, which are equipped with machinery to manufacture steel, but their costs of production are prohibitive; importations are cheaper and of infinitely better quality. The costs of erecting the steel-making equipments is practically a dead loss to all the Japanese shipbuilding yards. In June, 1921, the Japanese government raised the import duties on steel, making its cost in Japan higher than ever, especially to an industry which depends on cheap steel materials to enable it to compete in the world's markets. In order to maintain stocks on hand for possible emergencies the fixed investments of all shipbuilding establishments must be much greater than the present condition of the money market, and the industry itself, warrant.

Despite an apparent advance in the efficiency of the Japanese laborer during the time of the war, his efficiency is still far below that of the workman abroad. Comparing the efficiency of the laborers in the Kobe shipbuilding yards with that of the laborers in the Weir yards in England, the efficiency of the British workman exceeds that of the Japanese by two to six times. The wages of these British workmen are only 328 per cent. higher than those of the Japanese laborers in the Kobe yards. It is not difficult to figure that Japanese labor costs are accordingly higher than the British labor costs. This comparison is based on the 1919 wage scale at Wier's, and the 1921 wage scale in Kobe. Even with wages in Japan at one-third of wages in foreign countries the costs of shipbuilding in Japan are going to be higher than those abroad.

These are the fundamental weak points of Japan's shipbuilding industry, but there are other weak points. The cost of equipment is higher than in other countries, and interest is higher. With a greater capital investment than that required in similar foreign concerns, and with interest from 3 to 10 per cent. higher than abroad, the position of the Japanese shipbuilding interests is decidedly not a happy one to-day.

The import tax of Y.10 a ton on foreign-built vessels more than ten years old, and of Y.15 a ton on vessels less than ten years old, does not make it possible for Japanese shipbuilders to compete with foreign yards for Japanese business even. In such case it is difficult to believe that the future of this industry in Japan is at all promising.

It is impossible for the government to extend more assistance to the shipbuilders without seriously disturbing the present balance of the nation's economics. The only means of getting the industry out of the hole it is now in are somewhat as follows:

1. Capital decreases to be carried out on a large scale thereby permitting dividends to be paid out of present business.

2. Mergers of existing concerns to be carried out under the direction of the most efficient companies.

3. Conversion of equipment, in part or all, to the production of other commercial products.

Even if mergers should prove impossible to bring about a syndicate should be organized to effect mutual savings on the purchase of equipment; to confine certain classes of work to certain yards; to establish a common reserve of materials, which could be drawn upon by all members at need, even in excess of their proportions.

Conversion to other lines of industry has been carried out by the Yokohama Dockyard and the Ishikawajima Shipbuilding Co., in some part with not indifferent success. Other companies will probably be compelled in time to follow their examples.

S.M.R. Development Schemes for 1922-1923

IN order to further its development schemes (the majority of which have already been contracted for), the South Manchuria Railway Company has set aside the sum of 30,000,000 yen, with a reserve of 5,000,000 yen. In addition, the Company has a reserve of 18,000,000 yen brought over from the previous year. The principal works to be carried out, together with the amount to be expended thereon, are shown in the following table:—

	Yen.
Railways	8,466,271
Local administration	6,902,913
Mines	4,445,529
Electrical undertakings	2,007,881
Harbor works	1,710,171
Gas works	1,618,289

The proposed railway work includes the building of an additional track between Tiehling river and Chungku (13 miles), Chuanton and Shuangmiaotze (6½ miles), and Suchiatun and Wuchiatun (on the Antung line, 5.7 miles), rearrangement of the tracks on the Dairen wharves, and the provision of a bridge over the Tazeho. In addition to the building of a passenger bridge at Mukden station, the purchase of covers and sheets for the storage of general goods, it is proposed to install automatic signals at Mukden and Suchiatun, and rearrange the inter-routing of further signals at the principal stations. The scheme further includes the building of nine new goods locomotives, twenty passenger cars, seventy goods wagons, and the rebuilding of others on hand.

Local Administration

A new hospital will be built at Kirin, and additions will be made to the existing hospitals at Dairen, Wafaugtien and Tashichiao. It is also proposed to build a new school at Antung, and a public school hall at Fushun. Additions are to be made to the Mukden Middle School to serve as a preparatory for the South Manchuria Medical College. Roads and waterworks will be repaired and extended at Dairen, Antung, Kaiyuan and Mukden, and additional houses will be built for the employees at Harbin. It is further proposed to erect a seed supplying station at Kaiyuan and Changchun, and an agricultural experimental farm at Paintara in Inner Mongolia for the development of agriculture in that district.

Mining Work

The development of the open-cut mine, "Ronhoko," will be proceeded with, and includes the purchase of machinery, the laying down of additional railway tracks, and the provision of safety devices in the mines. In order to increase the quantity of tar obtained from the Lymu gas producer, a link, low temperature distillation apparatus will be installed. Repairs and extensions to waterworks and roads, and the building of additional houses for employees, are also provided for.

Electrical Development

The electrical schemes proposed include the continuation of the third power house at Antung and the transformer house. At Shakakou (Dairen), and the extension of the Changchun electric works. An ample supply of electric fixtures to the residents of Dairen, Mukden, Changchun, Antung and other places is also provided for. The tramways in Dairen will be extended, and additional passenger cars provided.

Harbor Works

The reclamation work begun two or three years ago at Jijiko and Shokoshi (east and west of Dairen respectively) will be continued and in addition the present dangerous goods pier at Jijiko will be rebuilt and the widening of No. 2 wharf completed.

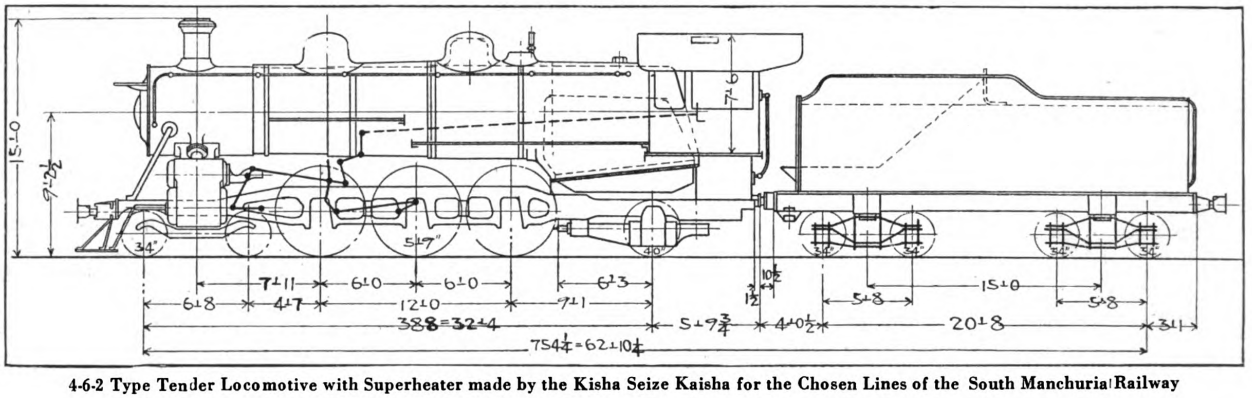
Gasworks

It is proposed to complete the "third term" extension of the Dairen Gasworks; the proposals also include the building of further gasworks at Mukden and the laying of gaspipes at Dairen.

Japanese Locomotives for Chinese Railways

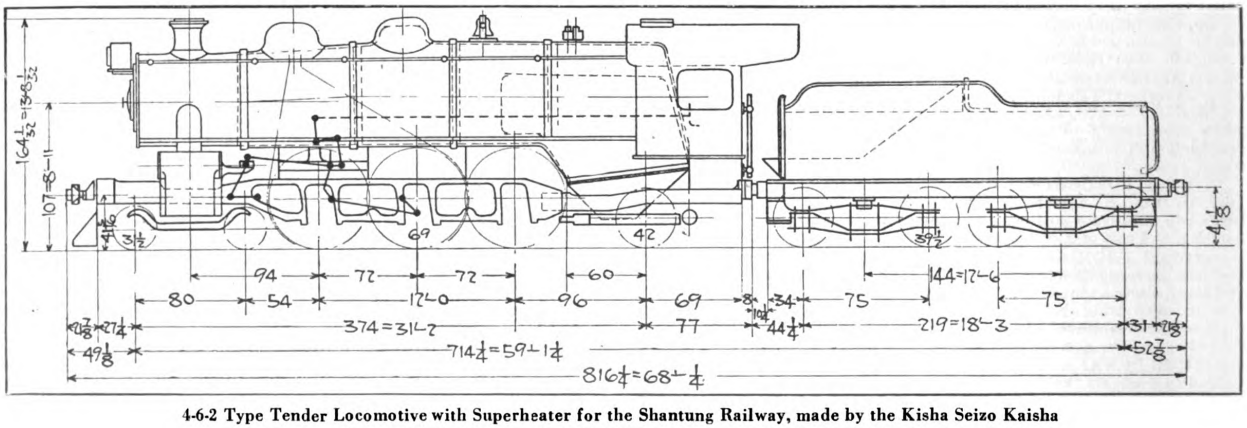
ONE of the first orders for standard gauge locomotives for service on Chinese railways placed with Japanese manufacturers was secured by the Kisha Seizo Kaisha of Osaka. This company was entrusted with building two of the 4-6-2 type of tender locomotives recently ordered by the Shantung railway administration in addition to a further order from the South Manchuria Railway for its Chosen lines. The Kawasaki Dockyard also received orders for several of the same type of locomotive. The Kisha Seizo Kaisha has specialized in the manufacture of locomotives since its organization and with the extension of its plant during the war it has devoted more and more attention to the possibilities of the export market in Eastern Asia, and is now prepared to construct standard gauge rolling stock.

Foreign engineers who have inspected the works and its products frankly state that these not only compare favorably with locomotives made in Europe and America, but in some particulars they possess distinct advantages. Many of the finest and most powerful engines in operation on the imperial government railways have been turned out at the Osaka works of this company. In addition, passenger and freight cars of all types and sizes are manufactured for the domestic narrow gauge railways and electric tramways, while standard gauge cars have been built for the



4-6-2 Type Tender Locomotive with Superheater made by the Kisha Seize Kaisha for the Chosen Lines of the South Manchuria Railway

			Working Order	Empty
Gauge of Track		4′ 8½″		
Dia. of Cylinder by Stroke		24″ × 26″		
Working Pressure		180 lb/sq. in.		
Grate Area		46.9 sq. ft.		
Total Heating Surface		3,055 ,, ,,		
Super ,, ,,		600 ,, ,,		
Evaporative Heating Surface Total		2,455 ,, ,,		
,, Tube		2,262 ,, ,,		
,, Fire Box		165 ,, ,,		
Arch Tube		28 ,, ,,		
Dia. of Boiler (out of 1st Ring)		5′ 6″		
Large Smoke Tube (Dia. Leng. × No.)		5⅜″ × 18′ 2 × 26		
Small Smoke Tube (Dia. Leng. × No.)		2″ × 18′ 2″ × 168		
Boiler Water				
Capacity of Tank		800 cub. ft.		
Fuel Carried		280,000-lbs.		
Weight on Leading Truck			43,500	
,, ,, Trailing Truck			40,000	
,, ,, 1st Driving wheel			,,	
,, ,, 2nd ,,			,,	
,, ,, 3rd ,,			,,	
Total Weight on ,,			120,000	
,, ,, of Engine			203,500	184,000
Weight on 1st Tender wheel			31,500	
,, ,, 2nd ,,			,,	
,, ,, 3rd ,,			,,	
,, ,, 4th ,,			,,	
Total Weight of Tender			126,000	48,000
,, ,, Engine & Tender			329,500	
Maximum Width			10′ 6″	
Tractive Power $= \frac{^{1}85 \text{ Pd.}^{2} S}{D} =$			332,000-lbs.	



4-6-2 Type Tender Locomotive with Superheater for the Shantung Railway, made by the Kisha Seizo Kaisha

Korean and Manchurian lines. The shops are equipped to make cars for any gauge of line.

The powerful locomotives built by the Osaka works employed on the Abt railway over the Usui pass of the Shin-Yetsu line of the government railways, have called forth unstinted praise and admiration from engineering circles.

The annual manufacturing capacity of the Osaka works is 120 locomotives, 1,500 steel freight cars, 8,000 tons of bridge beams, 250 various machine tools and about 10,000 h.p. of the Takuma water tube boilers. The capacity of the Tokyo Works is 250 bogie passenger coaches, 2,500 freight cars and 1,000 switch stands. In addition to the Honju works a Tokyo, the company operates another branch works in Tokyo at Higashi Hirai-machi, in Fukagawaku.

			Working Order		Empty
Gauge of Track	4′ 8½″	Weight on Leading Truck ...	40,000-lbs.		lb.
Dia. of Cylinder by Stroke ...	20″ × 26″	,, ,, Trailing Truck ...	35,000 ,,		,,
Working Pressure	200 lb/sq. in.	,, ,, 1st Driving wheel	35,000 ,,		,,
Grate Area	38.2 sq. ft.	,, ,, 2nd ,, ...	35,000 ,,		,,
Total Heating Surface...	2,232 ,,	,, ,, 3rd ,, ...	35,000 ,,		,,
Super ,, ,, ...	470 ,,	Total Weight on ,, ...	105,000 ,,		,,
Evaporative Heating Surface Total...	1,762 ,,	,, ,, of Engine ...	180.000 ,,		163,000 ,,
,, Tube	1,582 ,,	Weight on 1st Tender wheel	,,		,,
,, Fire Box	180 ,,	,, ,, 2nd ,, ...	,,		,,
Dia. of Boiler (out of 1st Ring) ...	5′ 3⅛″	,, ,, 3rd ,, ...	,,		,,
Large Smoke Tube (Dia. Leng. × No.)	5⅛″ × 16′ 0 × 22	,, ,, 4th ,, ...	,,		,,
Small Smoke Tube (Dia. Leng. × No.)	2″ × 16′ 0 × 130	Total Weight of Tender ...	105,000 ,,		474,000 ,,
Boiler Water	270 cub. ft.	,, ,, Engine & Tender	285,000 ,,		210,400 ,,
Capacity of Tank	680 ,,	Tractive Power = $\frac{85 \text{ Pd.}^2 \text{ S}}{\text{D}}$ =	256,000-lbs.		
Fuel Carried	160,000-lbs.				

First Jap Warship With Electric Drive Stands Sea Trial

General Electric Company Equipped "Kamoi" Which Sails for Japan Soon

THE first vessel of any navy other than that of the United States to be equipped with the electric drive, the Japanese fuel ship *Kamoi* was pronounced recently by representatives of the Japanese imperial navy and by electrical men to have successfully stood the tests applied during the builders' sea trials on Thursday off the Delaware capes.

The *Kamoi* was at sea for 36 hours on this trial, during which time she was put through tests that brought into play every possible stress on all parts of her machinery and equipment. She was manned by a crew of the New York Shipbuilding corporation in addition to a Japanese crew commanded by Capt. T. Murase. The Japanese naval officers, including Capt. K. Goto, chief inspector in the United States for the Japanese imperial navy, were much pleased with the way the *Kamoi* came through her trial.

The *Kamoi* is a 20,000 ton, 8,000 horse-power twin-screw fuel ship, built in this country rather than in Japan so that she could be equipped with the electric drive, which has been highly developed in the United States. Her electrical facilities, which were designed and installed by the General Electrical Company, includes the use of synchronous motors for the first time with any twin-screw ship.

The main propulsion unit is an 8,000 horse-power Curtis turbine generator, which supplies current to two 4,000 horse-power synchronous motors, directly driving the twin-screw propellers. The excitation current is supplied by two 400-kilowatt direct-current turbine generators, and these also furnish power for the electrical auxiliaries of the ship. The latter include the main circulation pump, main condensation pump, sanitary pump, blower motors, steering gear, radio apparatus, ventilators and light-lighting circuit. As a reserve equipment, a 625 kilowatt auxiliary alternator which can be connected to either of the auxiliary turbines in case of the failure of the main driving unit, has been installed.

The radio equipment, also of General Electric make, comprises a one kilowatt telephone and telegraph transmitter and two complete receiving sets. One of the latter has a range of 250 to 3,000 metres and the other a range of 250 to 30,000 metres.

The normal tonnage of the ship is 19,500, she is 480-ft. long and has a beam of 62-ft. Her draft is 28-ft., and deadweight displacement, 13,000 tons. She is a coal burner, equipped with four Yarrow type boilers.

Tokio Will Sell Bonds To Build New Subways

A series of bonds issues to be floated as the work progresses will finance the new Tokio, Japan, subway, which it is estimated will cost 189,000,000 yen, or about $90,000,000. The American Express Company Securities, which announced the plans for construction some time ago, declares that construction will be begun within a few months. The new subway will extend the length of the city from south to north, with a line crossing at right angles from the city's eastern to its western limits. Tokio has a population of more than 2,500,000 and covers an area approximately the same as that of Paris.

In view of the fact that it is expected that much American equipment will be used in the construction of the subway it is not unlikely that the bonds will be sold there to finance its purchase.

Chinese Develop Palm Fiber Trade With United States

A considerable trade has developed in what is known as "palm fiber" in Hongkong with the United States for the manufacture of brushes. The material is the leaf stem of a small palm which grows wild over much of the South China hill country, and which is generally cultivated in some districts for its leaves—the common palm leaf fan of commerce.

The fiber is obtained simply by soaking the stem and stripping off the outside. The fiber in the stem is then cut into convenient lengths and shipped in bundles of about 200 pounds each. The fiber is used all over South China, in the manufacture of what are popularly known as "bamboo brooms," and for Chinese scrubbing brushes and similar articles.

General View of Exterior

The New Kailan Building at Tientsin

THE new headquarters of the Kailan Mining Administration at Tientsin now nearing completion, is one of the finest examples of foreign architecture in China. It was designed by Mr. B. C. G. Burnett, the Tientsin representative of the well-known firm of Atkinson & Dallas, Ltd., in competition with several other architects. The contract for the erection has been carried out by Mr. Hong Mow-kee, a prominent Chinese builder of Shanghai, who has had special experience in the use of artificial stone such as is used for all the face work of the new structure.

The new offices form a rectangular pile 220 feet long and 120 feet deep with four stories aggregating some 70 feet in height, faced in artificial grey granite.

Mr. Burnett has adopted the Neo-classic style, and indicates Roman influence in the treatment of the main floor windows but, in the final plans, this has been eliminated by the adoption of square, mullioned openings, leaving the style throughout purely Grecian.

The main facades consist of colonnades Ionic columns on pedestals rising clear above the terrace, surmounted by an attic order. Boldly displayed on the main frieze is the administration's title and the year of construction in Roman numerals fashioned in bronze. The main entrance occupies the three central bays of the Meadows-road frontage and is approached by a broad easy flight of the steps in natural granite which lead to the vestibule through treble swing doors.

The Main Hall, looking towards the Cashier's Grille

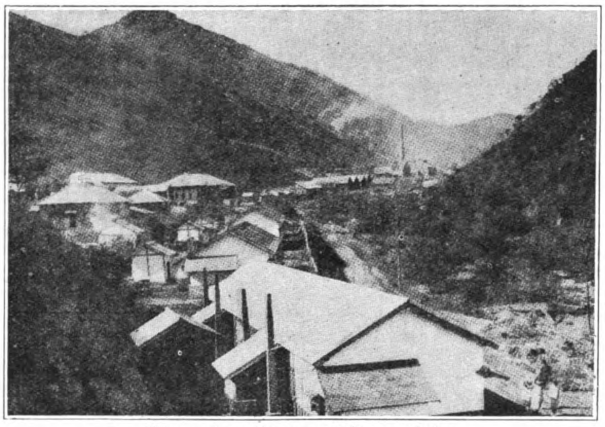
All the floors and the very extensive flat roof are connected by two electrically-driven six-passenger elevators. The hot water heating is from a two-unit installation deriving its power from small boilers of the Lancashire type: the treatment of sewerage by the modern septic process; the expulsion of all waste water and sewerage by pressure through a metal pipe communicating with the river and the use of the most modern appliances for ventilation, signalling and electric lighting.

The total cost of the construction of the head offices is approximately half a million dollars, exclusive of the value of the land.

Tienposhan-Tumen Light Railway

THIS long talk of light railway connecting the Tienposhan Silver Mines with the Tumen river in the Chientao district of the province of Kirin, is being pushed to completion despite the protests of the Peking authorities who refuse to recognize the concession signed by the ministry of communications and the subsequent contract entered into whit Chang Tso-lin. Like every other enterprise in China it has encountered the stubborn opposition of the native gentry, who profess to see in it a surrender of sovereign rights to Japan and who have used every method of obstruction known to the Chinese to prevent work being started on it.

The Tienposhan Silver and Copper Mines are located in the Chientao district, ten miles southwest of Laotoukou and are operated under a concession held by the South Manchuria Development Company (Tahsing Company) a Sino-Japanese enterprise which has erected a refinery and smelter and made considerable progress in development work. In order to facilitate the transport of ore and metal to the coast, a light railway line, 80 miles in length, was projected that would connect the mines with the Tumen river. At the same time, such a line would also have an immense strategic value in the event of any attempt on the part of the reds to re-open the old issues with Japan in Manchuria, and could ultimately be made to form part of the proposed Kirin-Kwanei Railway for which Japan holds the concession from the Chinese government. Aside altogether from its economic significance, events are transpiring which justify Japan in her determination to push through the work and hold the Chinese to their signed agreements.



Tienposhan Silver and Copper Mine

The project for the construction of this line had its inception in 1915. According to the Chinese version of the intrigues surrounding the concession appearing in the *Peking Daily News*, a Japanese subject named "Fan-tien-yen-ta-lan" signed an agreement with a Chinese named Wen Lu for the formation of a Sino-Japanese company with a capital of Y.2,000,000. A set of regulations of 15 articles was fixed, and the sanction of the Chinese government obtained through the influence of Wen Lu. Investigation, however, indicated that Wen Lu was employed by the Japanese to use his name in dealing with the Chinese officials. The ministry of communications appointed delegates to inquire into the matter, and having satisfied itself with the fact that it was not a *bonâ-fide* Sino-Japanese concern, the permit was cancelled on the 23rd December, 1919. It was recognized that there was no necessity for the construction of the line, as it would run parallel with the Chi-Huei line, besides many other reasons. However, the Japanese did not stop work and last year began construction on a large scale. The Chinese again raised objections, as there was no Chinese share in the Company, and the ministry of communications again appointed delegates to investigate. It was discovered that there was not a single Chinese share in the company, and that, moreover, the mines at Tienpaoshan had stopped operations for a period of more than one year.

Fearing that the result of the above-mentioned investigation would cause them to stop construction work, the Japanese employed a certain Hsu To-yu, secretary of the Company, who styled himself representative of the Chinese shareholders, to proceed with large funds to Holunghsien and Yenchibsien to enlist the assistance of the gentry there, who have ever since been styled as Chinese shareholders and who will be entitled to a certain amount of dividends without paying a single cent for their shares. Last April the Japanese began again to construct the line, and the students and merchants at Yenchi and Holung made a demonstration during which the Chinese shareholders were severely beaten. The Japanese published false reports stating that the movement against the construction of railway was engineered by Chinese connected with the independent party of Korea. Consequently the Japanese consul demanded the extradition of these two gentlemen, who went to Peking to obtain protection and redress. In July when President Li Yuan-hung was reinstated and parliament restored, Messrs. Li and Wen began to show the cabinet, parliament, the ministry, etc., the aggression of Japanese in their native district; and the government telegraphed to Mr. Tao, taoyin of Yenchi, instructing him to come to Peking to discuss the matter. At the same time General Chang Tso-lin, who was informed of the trouble, ordered Mr. Tao not to proceed to Peking but to come to him at once. The people, knowing that there would be no good result if any decision should be made in Mukden, immediately appointed Messrs. Chang Ping and Huo Wan-chen to make an appeal to General Chang Tso-lin, requesting him to cancel the agreement made with the Japanese. But Messrs. Tsai and Tao, foreign commissioner and taoyin of Yenchi, respectively, were there before them, and were secretly instructed by General Chang Tso-lin to support the Japanese. The representatives of Yenchi and Holung were received in audience by Mr. Wang Yung-chiang, who advised them to return to Kirin where they might appeal to their own officials, as Fengtien authorities did not like to interfere with the affairs of Kirin. They at once sought an interview with their commissioner and taoyin, who informed them that General Chang had already had an agreement with the Japanese, and that probably after the cancellation of the agreement, a Japanese loan would be contracted for the Chinese themselves to construct the line. The representatives lodged a written protest with these two officials, who showed the document to General Chang, but General Chang said that he did not like to handle the business and ordered that the representatives should return to Kirin to arrange with the authorities there. They at once returned and approached Mr. Kuei, the shenchang, who told them that being a native of the province, he would not conclude any agreement with Japan. At this time Messrs. Tsai and Tao paid another visit to Fengtien, where a secret agreement was signed between them and the Japanese. The agreement consists of 14 articles and stipulates that a loan of Yen 4,000,000 should be concluded for the enterprise. The publication of the news at once aroused the indignation of the people of Yenchi and Holung, but General Chang Tso-lin threatened to resort to drastic measures should the people raise any objection against his action. Again the people sent their representatives Messrs. Chang and Huo to the capital where they interviewed various important officials on the 13th and 14th October. Both the ministries of foreign affairs and communications have started to institute investigations, and the former will

lodge a strong protest with the Japanese legation after a report is received from Kirin. The Japanese legation will be informed that any agreement signed between Japan and Mukden without approval of the central government will be considered null and void.

Notwithstanding the protests of the waichiaopu, the Japanese minister has refused to consider it, or even to transmit the protest to Tokyo, basing his action on the statement that the contract was legally signed and ratified by a former minister of communications at Peking, and more recently ratified by the tuchun of Manchuria, Chang Tso-lin.

The formal agreement was signed by the Japanese company and the Chinese authorities notwithstanding the opposition of the ministry of communications in Peking. Furthermore, the Kirin provincial assembly declared that without its concurrence as the representative of the Kirin people, the agreement will be considered null and void; but General Chang Tso-lin says that by election of the provincial assemblies of Fengtien, Kirin and Heilungkiang, in his capacity as chief commander of the Paoan army or peace guards of Manchuria, he recognizes neither the veto of the Peking government nor the minority of opposition in the Kirin assembly, so that constructional works will begin by the concessionaire in accordance with the stipulations of the Sino-Japanese agreement which has been endorsed by the Japanese consulate-general in Mukden.

Such are some of the difficulties surrounding the most commonplace business for the development of China at the present time, but which, after all, are true to traditions and precedents.

Private Railways in Japan (*Continued from page* 743)

During the war many railway companies were unable to raise funds to build lines which had been licensed, and their licenses lapsed, but after the war there was a boom in railway building, and the boom still continues.

Tramways, urban railway lines, have also been increasingly prosperous, and since 1913 (Figures previous to 1913 are not obtainable), there has been a remarkable growth in the costs of construction per mile opened to business, although the mileage in operation has not shown a corresponding increase. The following table shows the development of tramways since 1913 :—

	1913	*1921*
No. of companies and official corporations operating tramways	124	189
Licensed mileage	1,625 miles	2,245 miles
Mileage opened to business ..	1,139 ,,	1,332 ,,
Costs of construction	Y.258,231,940	Y.933,683,450

Construction, as in the case of private railways, slacked off during the war. To-day, however, tramways are being constructed in all the principal centres of business, and the large cities are extending and improving their lines, the development of all the urban centres calling for large investments in better transportation facilities. Many of the cities where the tram lines are not owned by the municipality are planning the municipalization of the private lines. The city of Nagoya has just purchased the private tram lines in that growing city. To cover the purchase price a bond issue will shortly be floated. Such municipalizations are, however, difficult of realization under present financial conditions. The national government too does not countenance the issue of bonds for sale abroad. Consequently the advancement of the urban transportation facilities where capital must come through foreign investment is badly handicapped in Japan to-day.

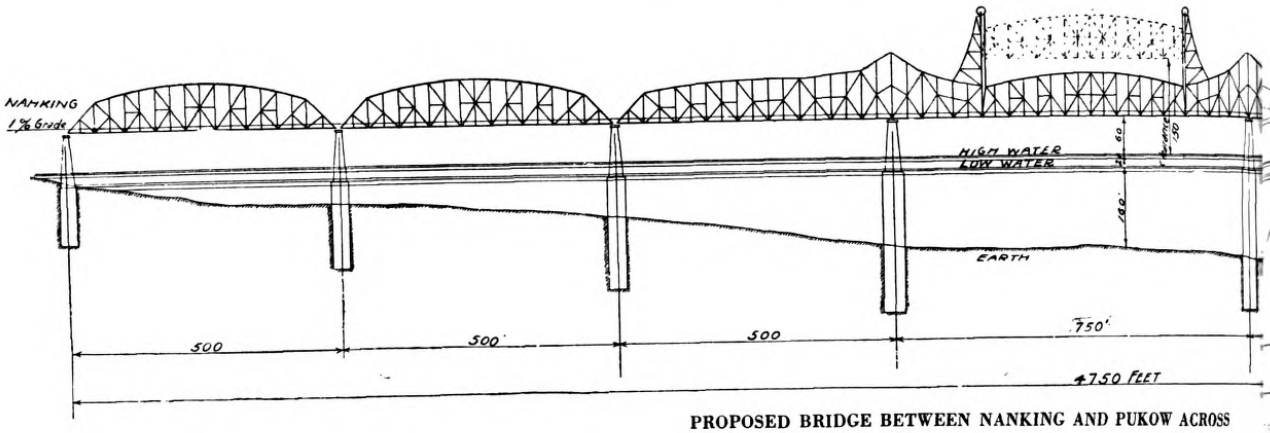
The number of local (private) railways which received the governmental subsidy during 1921 fiscal year amounted to 51; the amount of subsidy reached Y.914,066 which was an increase of Y.293,552 as compared with the previous year. The following table gives the names of the railways, their mileage of operating lines, and the amount of subsidy :—

Names	Mileage	Amount (in Yen)
Malesuzaka Ry Co. ..	14.4	Y.1,909
Uonuma	8.1	3,355
Tateyama	13.0	6.933
Shonan	5.5	780
Yoro	35.8	65,218
Chuen	6.3	5,415
Miyazaki	12.5	14,474
Chugasa (Nakagasa ?) ..	15.7	246
Miyazaki Kenei	3.9	9,828
Odawara Denki	5.6	127,706
Ujima	10.6	19,438
Ichihata Keiben	13.0	3,781
Yokkaichi	10.2	1,019
Uwajima	11.1	598
Takeoka	6.0	593
Chiba Kenei	14.1	59
Ise	16.9	37.131
Anno (Yasuno?)	12.2	13,344
Akami	3.6	3,533
Onsen Denki	6.6	17,367
Nagaoka	18.8	6,877
Sutsu	1.2	46,157
Ako	7.9	13,537
Hideu	8.8	9,439
Akita	18.2	48,399
Nagareyama Keiben ..	3.5	4,493
Shinoyama Keiben ..	3.0	4,716
Onoda Keiben	2.9	33
Awa Denki	8.7	31,136
Mihata Keiben	4.0	4,820
Arita	5.7	13,136
Osumi	15.2	4,998
Anan	6.5	7,290
Funaki	3.7	4,645
Santo Keiben	6.1	2,106
Kusatsu Keiben	22.9	34,229
Joshu	6.5	6,134
Mie..	3.7	9,546
Azumano	8.2	1,568
Ehime	16.1	78,158
Tsukuba	24.9	25,793
Yamato	6.3	10,825
Jozankei	18.6	9.315
Maruko	4.0	4,584
Nagato	11.3	3,634
Ohso	12.9	24,329
Kaetsu	4.1	15,661
Tama	4.4	26,233
Hizen Denki	6.0	26,538
Boseki	11.6	81,036
Saseho Keiben	9.0	21,571

Flour Industry in Manchuria

The flour industry in Manchuria has not been prosperous for some time, but owing to a good harvest of wheat, mill owners are very optimistic this year. There are now 46 flour mills in Manchuria with a daily capacity of about 60,000 bags (15,000 barrels). The following table shows the number of mills in the different parts of Manchuria and their respective daily output :—

	Number of Mills	*Daily Capacity*
Harbin	23	33,150 bags
Districts along the Chinese Eastern Railway ..	5	2,150 ,,
North Manchuria	6	3,600 ,,
Manchuria, South of Changchun	12	23,800 ,,
Total	46	62,700 bags



PROPOSED BRIDGE BETWEEN NANKING AND PUKOW ACROSS

Report Upon a Project for Bridging the Yangtze River Between Cities of Nanking and Pukow

By Dr. J. A. L. Waddell, Consulting Engineer

Peking, October 28th, 1921.

This is the second of the bridge designs prepared by Dr. Waddell for the ministry of communications and given by them to the Journal of the Association of Chinese and American Engineers for publication. The material is self-explanatory. It may be interesting to note that Dr. Waddell did not consider a bridge across the Yangtze at Nanking justifiable in view of the traffic. The river bottom at this section is extremely uncertain and consists of a soft silt to an unknown depth. The harbormaster instructs all ships anchoring there to lift their anchor at least once every 36 hours. Anchors left in longer than this time usually become imbedded and cannot be pulled out.

The type of foundation recommended by Dr. Waddell is similar to that prepared for him for the bridge across the Mississippi River at New Orleans, for which he was the consultng engineer. The erection of the bridge at New Orleans has been postponed due to the high price of steel resulting immediately after the conclusion of the war, but operations are expected to be resumed some time in the near future. The Mississippi at New Orleans also has an unknown scour and a varying silt bottom.]

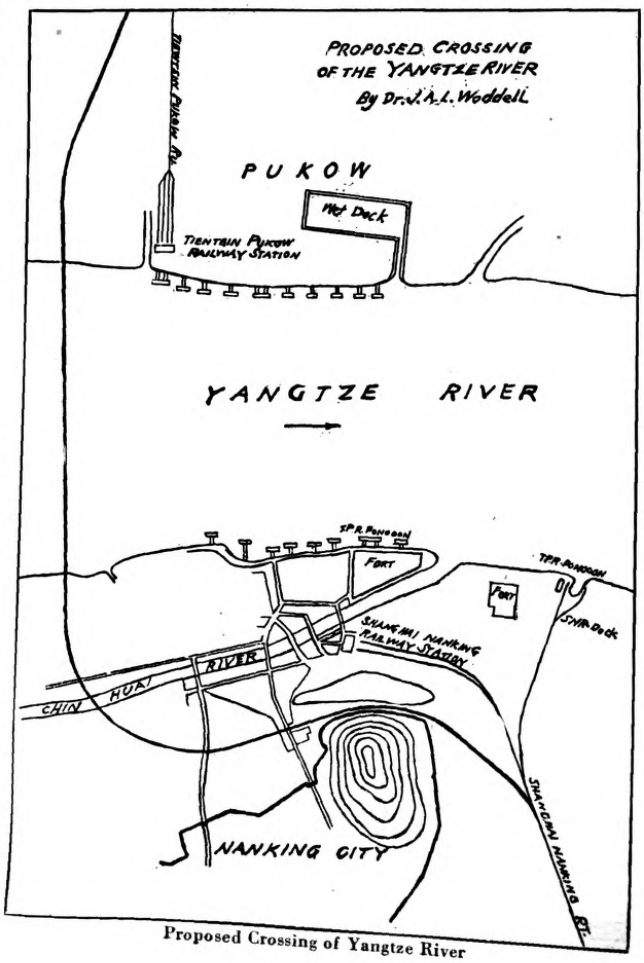
To His Excellency,

The Minister of Communications,

PEKING.

Your Excellency,

After completing my investigations at the mouth of the Han River in relation to the proposed bridging near there of that stream and the Yangtze-Kiang. I proceeded to Pukow for the purpose of looking into the possibility and expediency of building a bridge across the latter river between the cities of Pukow and Nanking; and now beg to report as follows:



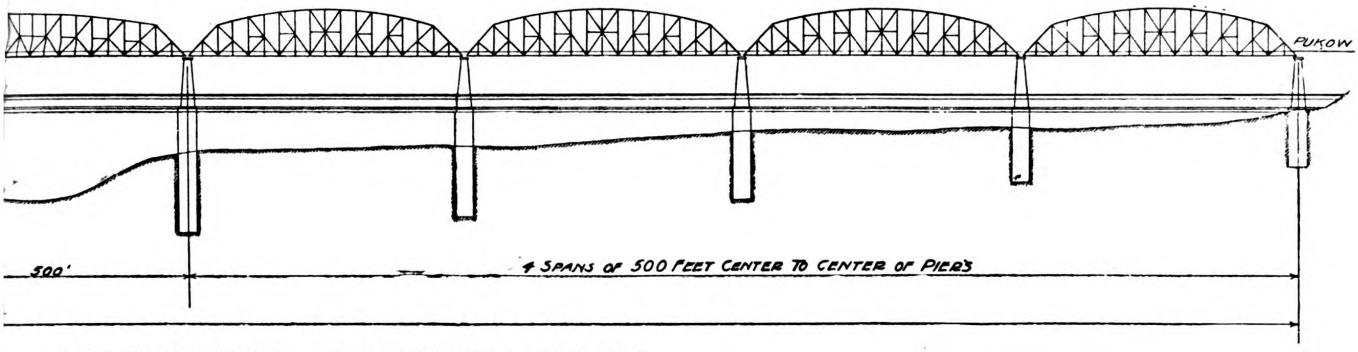
Proposed Crossing of Yangtze River

Feasibility.

The conditions for building a birdge at this location are difficult, for the caissons of the piers would have to be put down far deeper than those of any other bridge yet built, because, as well as I can determine, there is no bed-rock within reach, and the depth of water at lowest stage is over 160 feet. This does not mean that it is impossible to build the proposed structure, but only that it would be expensive, especially as contractors are timid about attempting to accomplish the unprecedented. However, I should not hesitate an instant about undertaking to design and engineer the building of such a bridge, were I called upon to do so. I have already advocated the construction of a great bridge across the Mississippi River at New Orleans, where the conditions are unprecedented and quite similar to those here under consideration. However, in this case it might prove necessary to found the caissons somewhat deeper below low water than those for the proposed New Orleans strcuture.

Expediency.

In respect to the question of expediency, I am compelled to report adversely to the pro-



THE YANGTZE RIVER. DESIGNED BY DR. J. A. L. WADDELL

ject ; because there is no traffic of any kind between the two cities which would begin to warrant the construction of such an expensive structure as the proposed bridge would have to be. Nor do I believe that, even in the next fifty years, there will be any business large enough to require its being built. Only a single line of railway now enters Nanking ; and that line parallels the river from Shanghai. As steamers can always carry freight more cheaply than railroads, all freight from Shanghai destined north will naturally go by water to Pukow, and will not need to be carried across the river. Thus only the passenger traffic of a single railway would use the bridge ; and at present there is not enough of it, in my opinion, to warrant the building of a carferry—much less a bridge. The little passenger traffic bound northward, and that of the reverse journey towards Shanghai, can readily be taken care of for many years to come by two fair-sized ferry boats of the ordinary type.

Although I am opposed for economic reasons to the construction of the bridge, as the problem of how to build it and to determine the approximate cost thereof has been set me, I shall proceed to its solution.

Sources of Information.

I obtained the necessary information for the making of cost estimates from several reliable maps and charts, and by asking questions of certain persons residing in Nanking, also by a personal reconnaissance of the route for a railway connection between the roads on the two sides of the river. On Sheet No : 1 of the accompanying drawings is shown the line of route, from the railway to the south to and across the river and then towards a connection with the railway on the north. The route was easily determined, as there was but little choice of crossings. The cities are situated opposite each other on the two sides of the river and at its narrowest point in the vicinity. The bridge tangent was located up-stream from the right line joining the ciries centres for two reasons :

First. It gives a satisfactory means of connecting the two railway systems without material injury to property, and

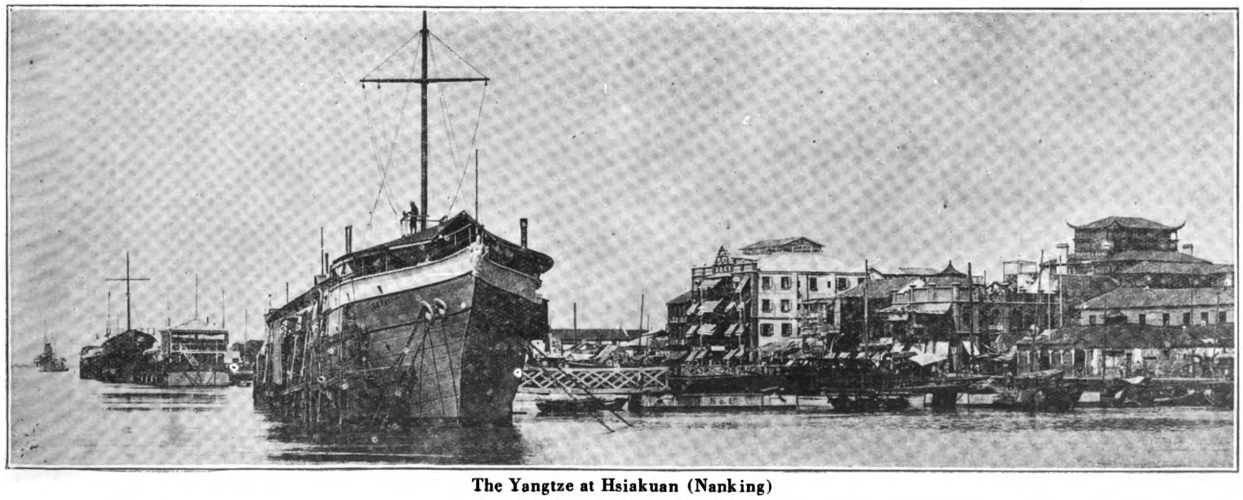
Second. It avoids the necessity for opening the lift-span to accommodate the passage of vessels not destined for up-river points beyond Nanking.

River Conditions.

As these are of a similar character to those at Hankow, although there are not as many junks passing, I have assumed, as before, a minimum clearance of 150 feet above extreme high water for ocean-going vessels under the vertical-lift span and one of 60 feet above the same everywhere else for junks. The difference in height between extreme high water and extreme low water is only 24 feet. or less than half of that at Hankow.

Layout.

Starting from the south bank, the structure, consists of two simple-truss spans of 500 feet each, then an anchor arm of 500 feet, then a cantilever span of 750 feet, then another anchor arm of 500 feet, and finally four simple-truss spans of 500 feet each, all distances being measured from centre to center of piers. These



The Yangtze at Hsiakuan (Nanking)

nine spans will cover practically the entire river between highwater shore-lines.

The greatest depth assumed for caisson foundations is 250 feet below low water at the deepest part of the section ; and from there to the banks it gradually reduces to 100 feet. It is possible, of course, that these depths are not great enough to reach sufficiently-solid material to afford proper bearing-resistance, but this point cannot be settled without the making of expensive borings. The assumption, however, is sufficiently accurate for the preparation of a preliminary estimate of cost.

Traffic Provisions.

As the cities of Nanking and Pukow are not of great commercial importance, and as their populations are comparatively small, there is no need to provide on the bridge for highway or pedestrian travel. In future it would be practicable to build approaches to the structure for an electric-railway system and to carry its tracks by gauntleting over the space occupied by the steam railway.

Owing to the great width of river and to the possible future importance of the proposed bridge, a double-track-railway structure has been adopted. It would not be good engineering to consider the building of a single-track structure for such a crossing.

Grades.

The limiting grade on the approaches I have taken as one per cent., properly compensated, of course, for curvature.

Live Load.

As in the case of the proposed Hankow crossing, the railway live load selected is Class 60.

Methods of Construction.

Owing to the great depths of both the water and the caisson foundations, the sinking will have to be done by the open-dredging process, and the shells of the caissons will have to be built of timber. The piers are to be constructed as described in my previous report upon the proposed Hankow crossing and the spans are to be floated to position.

Materials.

In respect to the unit prices of materials and the quantities thereof, see the just-mentioned report.

Estimate of Total Cost

Superstructure.

Ordinary carbon steel	63,000,000-lbs. @ 11 cents	$ 6,930,000
Machinery and Ropes	680,000-lbs. @ 50 cents	340,000
Floor	4,750 lin. ft. @ $30	143,000
Counterweights ..	900 cu. yds. @ $25	23,000
Electric machinery and house		54,000
Total Cost of Superstructure		$ 7,490,000

Substructure.

Main Piers, 4 @	$1,100,000 (Average)	$ 4,400,000
End Piers, 2 @	280,000 (Average)	560,000
Other Piers, 4 @	530,000 (Average)	2,120,000
Total Cost of Substructure		$,080,0000

Total Cost of Structure.

Superstructure	$ 7,490,000
Substructure	7,080,000
Approaches	3,150,000
Summation	17,720,000
Engineering and Contingencies, 10%	1,772,000
Grand Total Cost of Structure	$19,492,000
Say	$19,500,000

Economics.

The close equality in total costs of substructure and superstructure indicates that my layout is not far from economic. The diagram on page 164 of "Economics of Bridgework" shows that the economic span-length for foundations of this assumed depth for double-track railway bridges is 430 feet ; and the diagram on the previous page evidences that a variation of 50 feet above or below this figure would make very little difference in total cost of structure. This would make the range for such depth from 380 to 480 feet, while I have adopted 500 feet. I think that, for the assumed conditions at the proposed crossing, the larger figure is more nearly correct than the record of the diagram, owing to the high price of substructure timber and the difficulties that would be encountered in putting the caissons into proper position.

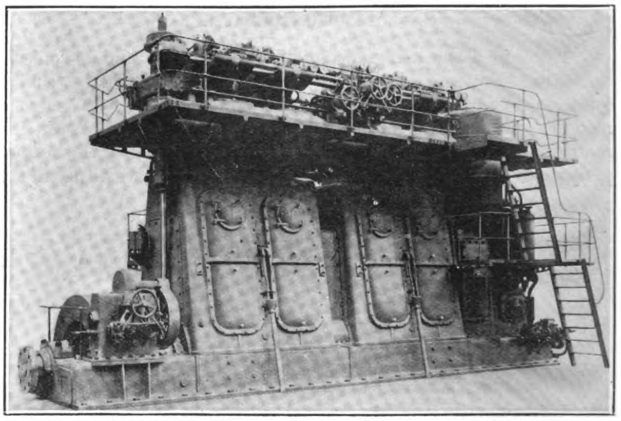
Conclusion.

Owing to lack of reliable data concerning substructure conditions, the preceding estimate is not as accurate as the one I made you for the proposed bridges over the Yangtze and the Han Rivers at Hankow ; but it is close enough to correctness for all practical purposes, especially in view of the fact that I am advising against the construction of the bridge.

The Largest Diesel Engined Vessel

A New Success of the Sulzer 2-Cycle Engine

THE Union Steamship Co. of New Zealand has placed an order with the Fairfield Shipbuilding Co., Ltd. in Glasgow for a motor passenger liner of 22,000 tons, which will be equipped with machinery of the Sulzer 2-cycle type of 12,000-13,000 BHP. Beside the main engines there will be auxiliary engines of about 1,500 BHP., the total engine power amounting to about 14,000 BHP. This ship will not only exc'te general interest because it is the largest passenger motor liner, driven by Diesel engines, but specially in view of the machinery, which in size and power by far exceeds any-



Sulzer Direct Reversible 1,250-S.H.P. Two-Cycle Marine Engine

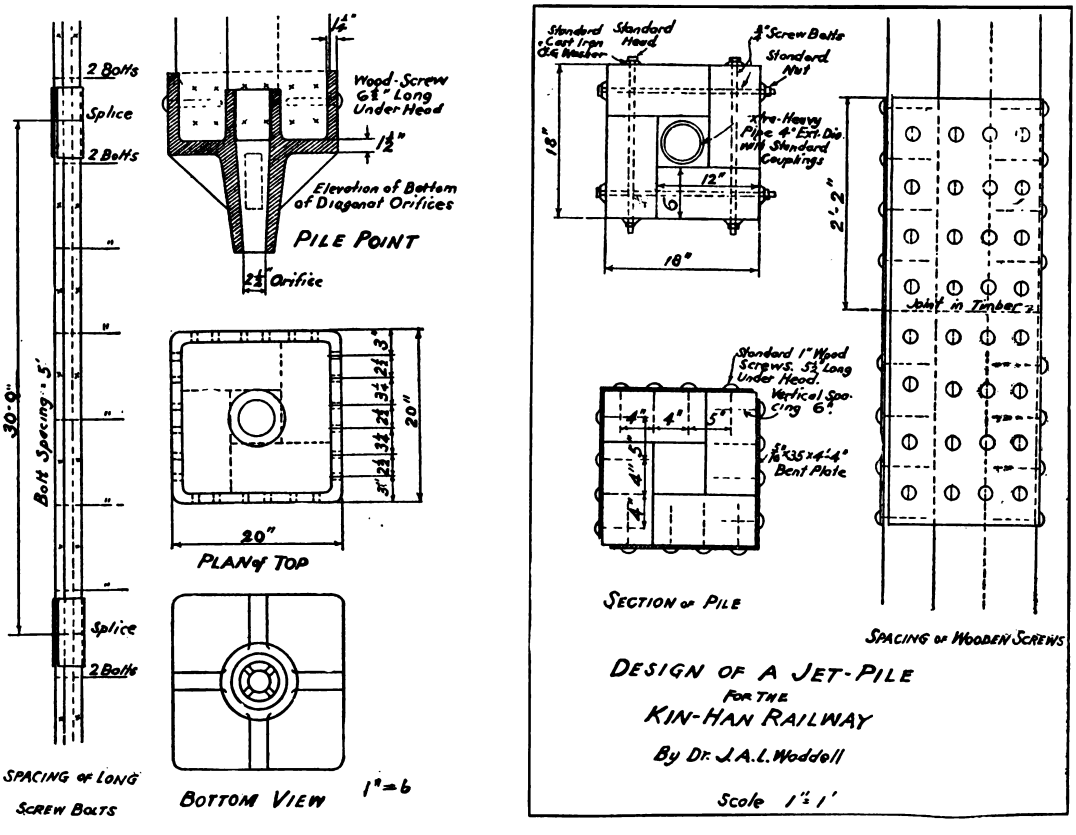
thing that has been done up to now in connection with motor ships. The Fairfield Shipbuilding Co. is a licensee of Sulzer Brothers in Winterthur. This new order seems to prove the fact, that for large powers the 2-cycle engine is decidedly more advantageous than the 4-cycle and as the general tendency is towards the building of big ships an important field is opened for the 2-cycle system of Diesel engines.

It may be mentioned as a curiosity that this special development of motorship equipment has been started by a firm in Switzerland, a country completely cut off from the sea.

A Hydraulic Pile for Use on the Yellow River Bridge and for Other Foundations in China

Recommended by Dr. J. A. L. Waddell to the Ministry of Communications

The large saving made by Dr. Waddell on his different bridge designs for the Yellow River and Yangtze crossings were in great part made possible by the type of foundation chosen by him. This included the use of the hydraulic pile as described below. Dr. Waddell believed that the most economic type of foundation for the majority of the Chinese railroad bridges, particularly those in the alluvial plain regions, was the pile caisson type, that is, a caisson sunk to ten or fifteen feet below the river bottom and resting upon concrete imbedded piles.—*Journal of the Association of Chinese and American Engineers.*



ABOVE is a drawing of the hydraulic pile which I evolved to meet the conditions at the Yellow River crossing, and at similar crossings in China. All the details are shown excepting the block to interpose between the top of the pile and the hammer. This I can describe and thus save the labor of draughting.

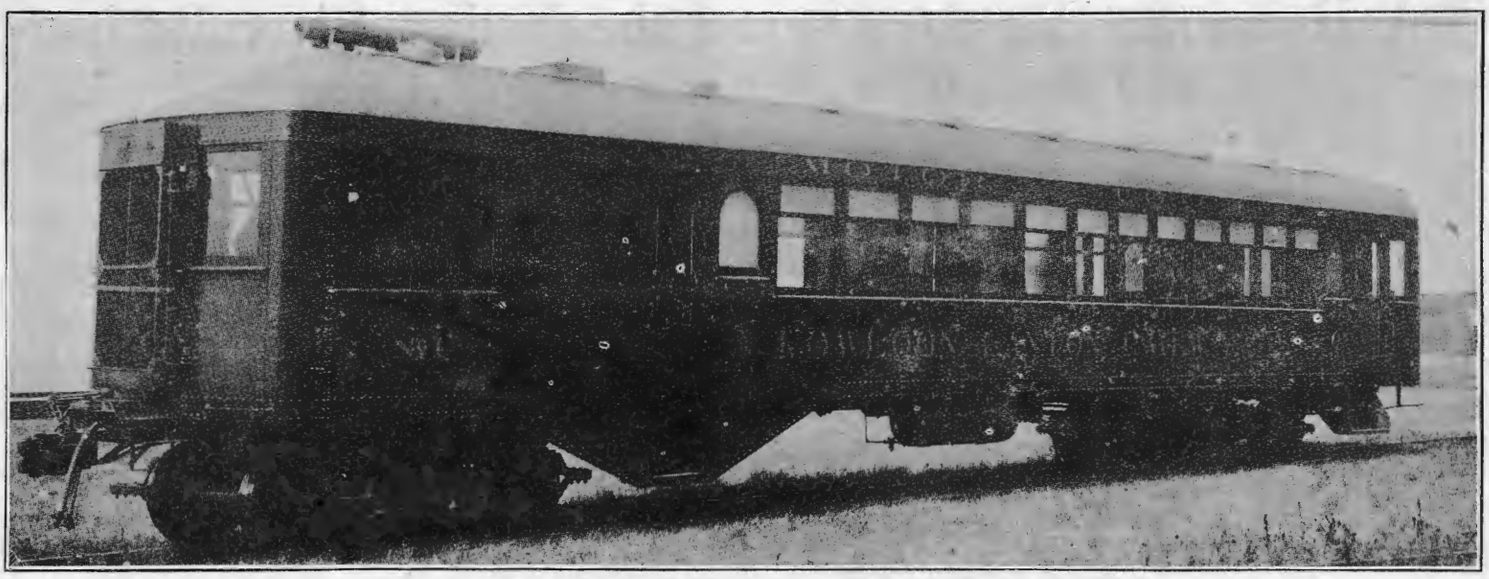
It can be made of either timber or metal, and there must be a hole at one side large enough readily to permit the passage of the goose-neck. When this goose-neck is to be removed, the hammer is raised, and then the block is raised also. After this, the goose-neck is unscrewed and another length of pipe attached.

There are two ways in which this pile can be used, depending upon the condition of the soil. If the latter be such that you can drive down a pile say 50 or 60 feet by the water-jet, then take off the jet, extend the pipe, extend the pile, put on the jet again, and proceed, your work would be much simplified, for then you would not have to pick up and handle very long piles and submit them to great bending moments. In this case, you can use timber scabs for the splicing of the abutting ends of the pile sections, and thus save the expensive metal that I have laid out for splicing.

The second case is when the material is such that if you were to try the method just described, you would be unable to start the jet to working again after lengthening the pile. In that case, the pile must be built full length at the out-set, and the pile driver must be high enough to take care of it. Under these conditions it will probably be necessary to use the steel plates for splicing, because the scabs would not be strong enough to resist the bending due to the weight of the long pile, if it were picked up near the middle to swing it into place.

The following is a description of the pile. It is to be built of 6-in. by 12-in. timbers thirty feet long, more or less, but all of the same exact length, in a square section of 18-in. with a 6-in. square hole in the interior. All joints are to be square cut. At the lower end of the pile there is a casting of either steel or iron, preferably of the latter, if made in China, as it should be. Probably a cast-iron point would weigh quite a little more than a cast-steel one. The design that I have made will be amply strong for all conditions to be met with, including beds of fairly large boulders. You might find later on that you can trim down the thickness of the metal considerably, and thus economize on the cost. If you know for certain that

(*Continued on page 753*)



The Hall-Scott Motor Coaches in operation on the Kowloon-Canton Railway

Motor Coaches on the Kowloon-Canton Railway

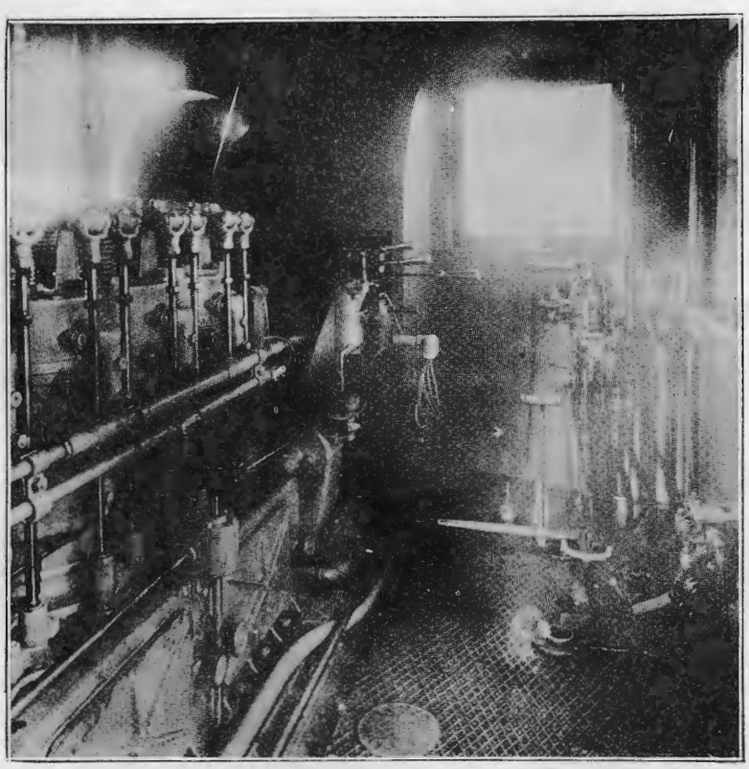
THE last few years have witnessed great strides in the development of railway transportation. The phenomenal increase in operating costs and the serious competition of motor-bus lines on the short haul traffic, has caused the railway officials a great deal of thought in both the United States and Europe.

The problem of cutting these costs were taken up by the manufacturers of railway equipment, and one of the solutions offered was the motor coach. These coaches are equipped with internal combustion engines, from which the locomotive and lighting power is derived.

The first railway in the Far East to adopt these coaches was the British section of the Kowloon-Canton railway. Two of these coaches arrived at Kowloon in the early part of December 1921 and during the past year have proved entirely satisfactory. The directors of the Manila Railway Company are now recommending the use of similar cars in order to compete with the increasing number of motor passenger and freight autobuses, and from Korea we learn that the authorities have abandoned the idea of electrifying the Seoul-Jinsen (Chemulpo) line at an estimated cost of Y.1,800,000, in favor of automotive railway cars, which can be purchased for Y.300,000. Other parts of the Far East are also confronting similar transportation problems arising from the loss of revenues through motor competition. With railway operating costs mounting higher each year attention is being attracted to the employment of a more economical transportation medium, by applying motor trucks to traffic problems.

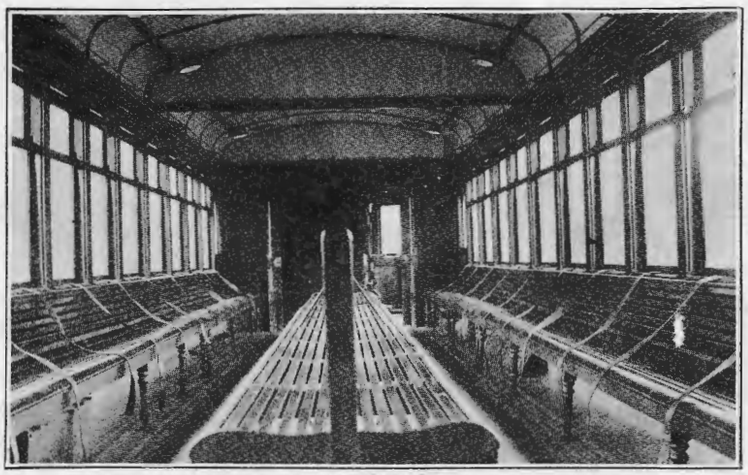
The motor coaches and trailers for the Kowloon-Canton railway were supplied by the Hall-Scott Motor Company of Berkeley, California.

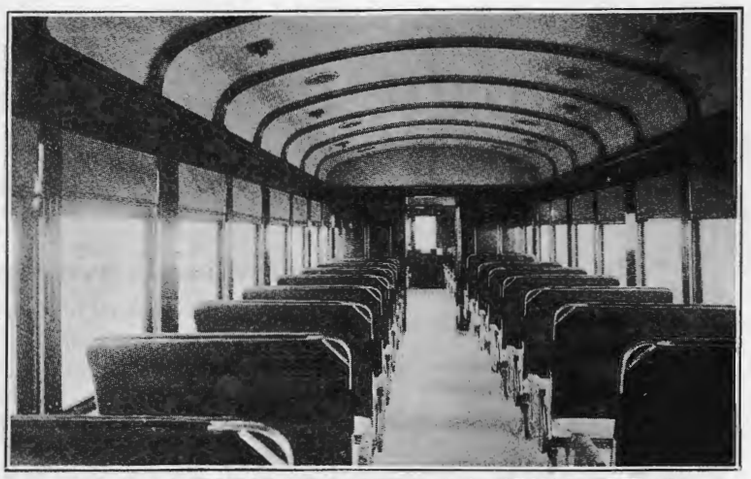
The car bodies are of steel construction throughout, measuring 61-ft. 11½-in. over sills, the interiors finished in west coast mahogany, the first-class compartment being fitted with seats upholstered in imitation leather, and the second and third with hardwood slat seats. The coaches and trailer are lighted throughout with electric lights by means of a 3½ K.W. Delco internal combustion engine, ceiling fans being provided in the first-class compartment.



Interior of the Motor Compartment of the Hall-Scott Motor Coaches for the Kowloon-Canton Railway

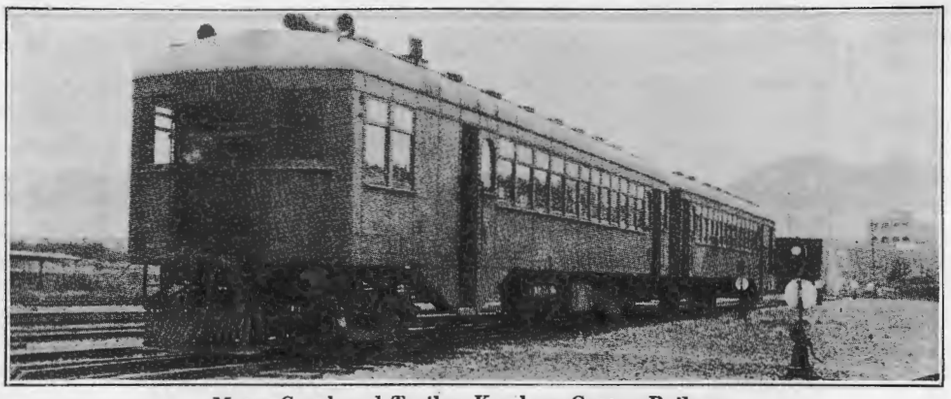
The motor coach power consists of a Hall-Scott M-6 type 150 h.p. 6-cylinder engine with cylinders 8-in. by 10-in. adapted for using kerosine as fuel. The motor is equipped with high-tension magneto and distributor with coil and battery connection providing two separate sets of ignition entirely independent of each other and running to two sets of spark plugs. Carburetor is of the float feed type. The air compressor is of two cylinder water cooled type with cylinders 4-in. by 4-in. directly driven from engine. The engine is equipped with





INTERIOR VIEWS OF PASSENGER COMPARTMENTS OF THE NEW MOTOR COACHES FOR THE KOWLOON-CANTON RAILWAY

Third Class **First and Second Class**



Motor Coach and Trailer, Kowloon-Canton Railway

electric starter. Engine cooling is provided by means of a vertical copper tube radiator with large diameter belt driven fan in connection. A 75-gallon storage tank is installed on the car underframe with pipe leads to side wall, double compartment kerosine and gasoline gravity tank, suction pump driven directly from engine to main tank for carburetor feed; gasoline compartment of gravity tank providing for initial starting of engine.

Transmission is of the selective type allowing of four speed changes in either direction.

On the level the motor coach can run up to 50 miles per hour, or with trailer 40 miles, the combined seating capacity being 90 third-class, 36 first and 36 second and luggage compartment. The coaches are fitted with Westinghouse quick-acting and straight-air brakes.

A HYDRAULIC PILE

(Continued from page 751)

there are no boulders to be encountered, you can make the casting as thin everywhere as it is practicable to pour it.

The timbers are to be bolted to the casting so firmly that there will be no chance for detachment during driving. The splices, if of steel, are to be made with $\frac{5}{16}$-in. by 35-in. plates, 4-ft. 4-in. long, bent to a right angle, and bored for the passage of wood-screws $5\frac{1}{2}$-in. long under head—but no longer. As shown on the drawing, the arrangement of the holes must involve staggering on the two sides of the bent plate, so as to avoid clashing of screws.

As before indicated, under certain conditions plank scabs $2\frac{1}{2}$-in. by 17-in. by 3 or 4-ft. long with beveled lower edge can be used the thickness at the lower end being about $\frac{1}{2}$-in.; this to provide for going through hard material such as gravel or boulders.

The four timbers forming the pile are to be screw-bolted together with $\frac{3}{4}$-in. bolts and cast-iron washers—all as shown on the drawings. There is no need whatsoever for sinking these washers into the timber in order to avoid friction.

There is to be a 4-in. extra-strength pipe cut into lengths convenient for handling and attaching, with the usual couplings that turn in a right-handed direction. The connection of the pile to the casting, however, must be left-handed, so that by twisting the long pipe in a right-handed direction it will be detached therefrom after the pile is driven. On this account, whenever an extra length is being added to the pipe, the part already in place must be held tightly by tongs so as to prevent any turning thereof.

At the top of the pipe there is to be a goose-neck, attached by ordinary couplings, with some kind of a quickly-made connection to the 4-in. hose leading to the pump.

This hose is to be of the very strongest kind procurable, so as to permit of a high water pressure—say 200-lb. per square inch.

For the timber I would suggest Oregon fir cut *full size* so that the pile, when finished, will square all of 18-in. If the timber be purchased in a large quantity, the odd size will cost almost nothing extra, except for the larger amount of timber used. Of course, timber of standard market section, which is always a little less than the nominal section, can be used, but it will not be quite so convenient. It might be found after trial that it would pay to have all timber dressed full size on all four faces, but I anticipate that this refinement will not be needed.

Of course, care must be taken to stagger the long screwbolts attaching the component timbers, in order to avoid interference and the unnecessary weakening of the timber section at any point.

Holes will have to be bored full-size or even $\frac{1}{16}$-in. greater for the long screw-bolts; but only very small holes should be used for the short wood-screws. Possibly these holes may be omitted altogether, but I think not.

If any trouble be experienced in making the casting in China, it can be divided into two parts by a plane on A. B, but in that case the total thickness of the two adjoining bases should be $2\frac{1}{2}$-in. or $1\frac{1}{4}$-in. each. These two castings would have to be bolted together by a number of turned 1-in. or $1\frac{1}{4}$-in. bolts in drilled holes.

All bolt-holes in the casting would have to be drilled.

The volume of water used would have to be about 500 gallons per minute, at least, and possibly somewhat more, all depending upon the character of the soil to be penetrated. It is true that in some of my work I have used 350 gallons per minute and have found this to be sufficient, but I believe that the larger amount would be preferable.